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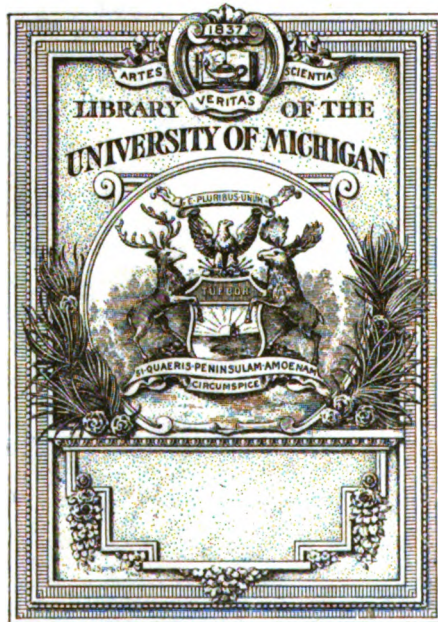
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NEW JERSEY
State Board of Agriculture.
1886.



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STATE OF NEW JERSEY.

FOURTEENTH ANNUAL REPORT

OF THE

New Jersey Board of Agriculture.

1886.

PRINTED BY ORDER OF THE LEGISLATURE.

CAMDEN, N. J. :
S. CHEW, PRINTER, FRONT AND MARKET STREETS.
1887.

STATE BOARD OF AGRICULTURE.

OFFICERS FOR 1887.

PRESIDENT,

HON. EDWARD BURROUGH, Merchantville, Camden County.

VICE-PRESIDENT,

WILLIAM R. WARD, - Newark, Essex County.

TREASURER,

FRANKLIN DYE, - - Trenton, Mercer County.

SECRETARY,

WILLIAM S. TAYLOR, - Burlington, Burlington County.

EXECUTIVE COMMITTEE.

PROF. GEO. H. COOK, - New Brunswick, Middlesex Co.

D. D. DENISE, - - Freehold, Monmouth County.

MORRIS BACON, - - Greenwich, Cumberland Co.

ALSO,

THE PRESIDENT, VICE-PRESIDENT, TREASURER AND SECRETARY.

To the General Assembly of New Jersey :

In accordance with the provisions of the act creating a State Board of Agriculture, adopted April 22d, 1884, I have the honor to present the annual report for 1886.

WM. S. TAYLOR,

Secretary.

BURLINGTON, Burlington County, February 14th, 1887.

FOURTEENTH ANNUAL SESSION
OF THE
NEW JERSEY STATE BOARD OF AGRICULTURE
TRENTON, N. J.,
January 26th and 27th, 1887.

FIRST DAY'S SESSION.

Board called to order at 10.30 A. M., in the Supreme Court Room, State House, Trenton, January 26th, by the President, Hon. Edward Burrough.

The President: The hour for the meeting of the State Board has arrived.

I wish to ask you all, as an especial favor, that when addressing the Chair you will be as distinct as possible. The Chair will endeavor to announce the names of every speaker, but when the name is unknown, the speaker will please give it before speaking.

The first business in order will be the calling of the roll of delegates. The Secretary will please call the roll.

The Secretary called the roll and the following answered to their names :

Charles E. Elmer,	Bridgeton,	Geological Survey.
Isaac M. Smalley,	Roadstown,	Board of Visitors.
Jno. DeMott,	Middlebush,	Board of Visitors.
David A. Shreve,	Haddonfield,	Board of Visitors.
Wm. S. Taylor,	Burlington,	Presd't. Exp. Station.
P. T. Quinn,	Newark,	State Agr. Society.
E. A. Wilkinson,	Newark,	State Agr. Society.
Wm. R. Ward,	Newark,	State Horticultural So'ty.

E. Williams,	Montclair,	State Horticultural So'ty.
A. J. Rider,	Trenton,	Cranberry Growers' Ass'n.
Hermann Trisch,	Egg Harbor City,	Atlantic County Board.
Chas. Kraus,	Egg Harbor City,	Atlantic County Board.
James Lippincott,	Mt. Holly,	Burlington County Board.
Joshua Forsythe,	Pemberton,	Burlington County Board.
E. S. Huston,	Haddonfield,	Camden County Board.
VanBuren Giffin,	Camden,	Camden County Board.
Morris Bacon,	Greenwich,	Cumberland Co., Board.
Wm. Deicks,	Livingston,	Essex County Board.
A. E. Hedden,	Verona,	Essex County Board.
G. H. Gaunt,	Paulsboro,	Gloucester Co. Board.
Thomas Borton,	Mullica Hill,	Gloucester Co. Board.
John B. Fisher,	Sergeantsville,	Hunterdon Co. Board.
H. F. Bodine,	Locktown,	Hunterdon Co. Board.
Franklin Dye,	Trenton,	Mercer County Board.
J. M. Dalrumple,	Hopewell,	Mercer County Board.
D. C. Lewis,	Cranbury,	Middlesex County Board.
J. M. White,	New Brunswick,	Middlesex County Board.
D. D. Denise,	Freehold,	Monmouth County Board.
Wm. S. Combs,	Freehold,	Monmouth Co. Board.
Wm. F. Ely,	Madison,	Morris County Board.
J. Walter Pancoast,	Sharpstown,	Salem County Board.
J. W. Dickinson,	Woodstown,	Salem County Board.
D. C. Voorhees,	Blawenburgh,	Somerset County Board.
Wm. S. Potter,	Somerville,	Somerset County Board.
Wm. A. Stiles,	Deckertown,	Sussex County Board.
J. A. McBride,	Unionville,	Sussex County Board.
N. W. Parcell,	Elizabeth,	Union County Board.
D. C. Crane,	Roselle,	Union County Board.
David T. Haines,	Medford,	Burl. Pomona Grange.
H. I. Budd,	Mt. Holly,	Burl. Pomona Grange.
David S. Adams,	Mickleton,	Glou. Pomona Grange.
F. B. Ridgway,	Mullica Hill,	Glou. Pomona Grange.
Isaac H. Hoffman,	Locktown,	Hunt. Pomona Grange.
Theo. Cubberley,	Hamilton Square,	Mercer Pomona Grange.
M. D. Dickinson,	Woodstown,	Salem Pomona Grange.
E. L. Borton,	Woodstown,	Salem Pomona Grange.

MINUTES OF ANNUAL MEETING.

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The President: The next thing in order will be the adoption of the order of business, as given on the printed programmes.

Mr. Rogers: I move that the order of business as printed be followed during our sessions here, as nearly as may be.

Mr. Quinn: I would amend by adding that it be not deviated from, unless by consent of the meeting.

The question being on Mr. Quinn's amendment, it was adopted.

The question then being on the motion as adopted, that the printed order of business be adopted, and that no deviation be made from it without the consent of the meeting, it was so ordered.

The President announced the following Committees:

ON CREDENTIALS.

E. Williams,	Essex.
G. H. Gaunt,	Gloucester.
F. S. Holcomb,	Hunterdon.

ON RESOLUTIONS.

Ralph Ege,	Mercer.
Wm. A. Stiles,	Sussex.
J. W. Dickinson,	Salem.

ON LEGISLATION.

Hon. Theo. Budd,	Burlington.
Hon. A. W. Cutler,	Morris.
Hon. I. M. Smalley,	Cumberland.

ON REPORTS OF OFFICERS.

Van Buren Giffin,	Camden.
Dr. W. S. Combs,	Monmouth.
J. M. White,	Middlesex.

ON REPORTS OF COUNTY BOARDS.

John DeMott,	Somerset,
Hermann Trisch,	Atlantic.
D. C. Crane,	Union,

The President: The next order of business will be the reading of the minutes of the meeting of last year.

Mr. Dickinson: As the minutes of the last meeting have been printed in the annual report of 1885, I move that the reading be dispensed with, as it will take up too much of our time.

The question being upon the motion of Mr. Dickinson, it was agreed to.

The President: I would ask that the chairmen of the respective committees just announced will see that their committees are called together as soon after recess as possible.

Our next business will be the reading of the report of the Executive Committee; the Secretary will please read it:

[See Report.]

Mr. Forsythe: I move the adoption of the report. Carried.

The President: In accordance with our order of business we will refer the same to the Committee on Reports of Officers.

Our next business will be the reading of reports of County Boards.

STATE AGRICULTURAL SOCIETY.

[See Report.]

STATE HORTICULTURAL SOCIETY.

[See Report.]

CRANBERRY GROWERS' ASSOCIATION.

[See Report.]

ATLANTIC COUNTY BOARD.

[See Report.]

The President: The report will be received and referred to the Committee on Reports of County Boards, if there is no objection. So ordered.

BURLINGTON COUNTY BOARD.

[See Report.]

Mr. Williams : This is a very interesting report, and very voluminous, but if it is a sample of what the others are like we will have to stop here a week or so. (Laughter.) I hardly think we can digest as much as that from each of the different counties at one sitting.

I would also like to make the suggestion in this connection that the term "basket" is a very indefinite term. It may hold a peck or it may hold a half bushel, or even a bushel, or more. Mr. Budd reports so many "baskets" raised in a crop. Now, what does he mean by that? Does he mean baskets holding a peck or half a bushel, or how much do they hold? Our people in this vicinity will probably understand this all right, but the report of this Society goes out from here to people who know nothing of the size of our baskets, and I think such measurements should be given in bushels or pounds. That is the only fair way to make such reports. In measuring sweet potatoes we always estimate by the bushel, and then we can all know what a crop amounts to. I merely make this as a suggestion.

Mr. Pancoast : I don't think we should spend so much time listening to these long reports.

I move you that we have only such portions of the county board reports read as are of especial interest to the Board of Agriculture, and then all the counties can be heard from. We will all have the privilege of reading these reports when they are printed in the annual report of the State Board. I think that only those matters pertaining to resolutions to be offered should be brought to the attention of the State Board by reading here.

The President : If there is no objection the reports will be curtailed as much as possible, the secretaries of county boards reading extracts from their reports, and the papers then to be referred to the Committee on Reports of County Officers. So ordered.

CAMDEN COUNTY BOARD.

[See Report.]

CUMBERLAND COUNTY BOARD.

[See Report.]

Mr. White : I move that we dispense with the reading of these reports from the different county boards.

Mr. Lewis : I would like to amend that by saying that we dispense with their reading, unless there is something in them of especial interest to the members, or something that should be considered by this meeting. If there is nothing of interest let them be referred to the Secretary of the State Board direct.

Mr. Dye : What points do you call of especial interest ? All these reports contain something of interest, or something that should be acted on by this Board, if not at this then at some subsequent meeting. I think the suggestions made are very apt, but now we had better go on as we are, as not even the writer of a paper can pick out matter of most interest to this meeting. Let the readers of the papers do the best they can and give us the substance of their papers as near as they can.

The Secretary : I hope that course will be followed, and that we can give all the secretaries of county boards a chance. Last year we cut off those secretaries from counties at the lower end of the alphabetical list, while the first on the list were allowed to read their papers as they have to-day. This was unfortunate, as there was a great deal of matter contained in those reports which was of special interest to the members of the State Board. We would like to gather all these in this year, if possible.

Mr. Haines : We can easily remember the time when this organization was poverty stricken and we had nothing to do here. There were only a few men here then, and we were praying for more farmers to attend, and for more papers and reports, and more business. To-day we have got what we have been praying for, and now what are you going to do with it ? (Laughter.) I think it is unfair, as has been said, to serve one county board thus and another in a different manner. What is sauce for one is good enough for the other. We should give the same to the goose as to the gander. (Laughter.) We have been wanting these papers, and now that we have them, we don't want to cut them down. There has been a strong effort made to get business before this State Board, and the increased interest that is shown by the farmers of New Jersey has been most gratifying.

Let us then be very careful how we curtail these reports. I think we should hear as much of the papers as we can.

The President: Let each Secretary of a County Board read his report, and skip such matters as he thinks best to omit. They will then be referred to the Committee on Reports of County Boards, and that Committee will report back to this meeting for action.

ESSEX COUNTY BOARD.

[See Report.]

GLOUCESTER COUNTY BOARD.

[See Report.]

HUNTERDON COUNTY BOARD.

[See Report.]

MERCER COUNTY BOARD.

[See Report.]

Mr. Bodine: I would like to say one word in regard to the matter Mr. Dye refers to in his report. The last few years in Hunterdon the locust caused the same thing to the trees that he speaks of in his report. The branch is hurt and finally dies, and falls to the ground and lays there until some day the locust comes out and begins its ravages again. That is my idea of it. I think the locust causes the trouble you speak of in your report.

The President: The hour for the noon recess has now arrived, though we will not adjourn until we hear whether or not we can have the Assembly Chamber for our meeting to-night.

A Member: I was in the Senate Chamber when the vote was taken, and they have said that you can have the Assembly Chamber this evening and to-morrow evening.

Mr. Stiles: Before the meeting adjourns I would like to say that it appears as if this method of making the reports was a failure. They are very valuable and very interesting, and very instructive, and they are also very helpful to us all as farmers, and are probably of more importance than many of the other documents that will be brought before us for consideration. I

would like to suggest, while the topic is fresh in our minds, that we should take some steps towards utilizing the matter contained in these very valuable reports. Would it not be practicable for all the Secretaries of county boards and others to hand in their reports on the first of the year, say on January 1st? The Secretary of the State Board could go over them and pick out such matters as would be of interest, and prepare the programme accordingly. To-day we have to crowd them into a third of the forenoon, and this is not sufficient time to go over such valuable matter. Another year, if this is done, and we find there is too much matter to be considered satisfactorily in one forenoon let us take the whole day to it.

Mr. Haines: Referring to the list of committees, would it not be well to give them authority, where vacancies have occurred, to fill such vacancy, so that the business before them can be gotten through with more expeditiously? I move that the committees shall have authority to fill any vacancies that may occur in their respective numbers.

So ordered.

On motion, adjourned until 2 o'clock.

AFTERNOON SESSION.

Afternoon session opened at 2 P. M., with President Edward Burrough in the chair.

The President: Unless objection is offered we will proceed with the reading of the County Reports. The next in order is Monmouth County.

MONMOUTH COUNTY BOARD.

[See Report.]

MORRIS COUNTY BOARD.

[See Report.]

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MIDDLESEX COUNTY BOARD.

[See Report.]

SALEM COUNTY BOARD.

[See Report.]

SOMERSET COUNTY BOARD.

[See Report.]

SUSSEX COUNTY BOARD.

[See Report.]

UNION COUNTY BOARD.

[See Report.]

Mr. Quinn: In relation to the resolution embodied in Gloucester county report, I move that that be referred to the Committee on Legislation. So ordered.

The Chair: All the resolutions embodied will be handed the Committee on Resolutions, unless there is objection offered, and they will report on them to the State Board. So ordered.

The next business in order will be the report of the Committee on Credentials. Is that committee ready to report?

Mr. Williams: I cannot make a full report, as chairman of that committee. We have the credentials all right with the exception of A. J. Rider. We have here also a credential for Michael Taylor, from the Monmouth County Fruit Growers' Association, as their delegate.

The President: If there is no objection the report will be accepted. So ordered.

The President: The next business will be the appointment of a Committee on Nomination of Officers for the ensuing year.

As each county is called the members from that county will please announce the name of their committeeman.

Atlantic,
Burlington,
Camden,

No delegate present.
James Lippincott.
I. W. Nicholson.

Cumberland,	Isaac M. Smalley.
Essex,	E. Williams.
Gloucester,	D. S. Adams.
Hunterdon,	Isaac H. Hoffman.
Mercer,	Franklin Decou.
Middlesex,	Samuel Blish.
Monmouth,	J. H. Denisé.
Morris,	J. H. Baldwin.
Salem,	M. D. Dickinson.
Somerset,	David C. Voorhees.
Sussex,	Wm. A. Stiles.
Union,	Noah W. Purcell.

Mr. Bacon: I see the member of the Assembly from Cumberland county has just come in. There is something I would like to have read before this State Board, and to have them take some action on, if thought best to do so.

Mr. Ridgway: Mr. Roe, from Gloucester county, has presented a bill which should have our consideration.

Assembly Bill, No. 16, State of New Jersey. An Act to protect farmers, gardeners and fruit growers against the loss of baskets and other packages.

The President: If there is no objection this will be referred to the Committee on Legislation. So ordered.

The next business in order is the address of the President.

(See President's address, the reading of which was followed by prolonged applause.)

The President: I will now ask Mr. Ward, Vice President, to preside over your meeting.

(Mr. Ward here takes the chair.)

The Secretary: The next on our programme is "Our Signal Service," by H. C. Dunwoody, 1st Lieutenant, 4th Artillery, and acting Signal Officer, Washington, D. C. The Lieutenant telegraphs that he cannot be here until to-morrow, and we will, therefore, have to postpone this subject.

Dr. Newton, State Inspector, Paterson, who is to give us an address on "Imitation Butter," is here. I therefore move that we change the order of business so as to allow him to give us his paper. Agreed to.

The Vice President: I have the pleasure of introducing to you Dr. William K. Newton, State Inspector, Paterson, N. J., who will address you on the subject of "Imitation Butter."

[See Paper.]

The Vice President: What is your pleasure. If there is no objection we will order the paper published in our annual report.

Mr. Budd: I notice in the description given of the processes of manufacture nothing is said about acids. I have heard that there is always more or less acid used in the manufacture of imitation butter, and that those who handle it, as well as the tubs or packages, have trouble with the acid, as it eats their hands and the packages containing it.

Dr. Newton: I think there is no foundation in that statement, as there are no acids used. There was a patent four or five years ago which advocated or required the use of acids. They use nothing now but a little brine, to make the so-called "neutral."

On motion a vote of thanks was extended Dr. Newton for his able, interesting and instructive address.

The Vice President: The next topic on our programme is that of "Sheep Husbandry," by Hon. F. S. Holcomb, Mt. Airy, Hunterdon county. Will Mr. Holcomb please come forward?

[See Paper.]

The Vice President: Gentlemen, you have had a very practical paper; what will you do with it?

If there is no objection the paper will be received and printed. So ordered.

The question is now open for discussion.

Mr. Holcomb: I hope there will be some discussion on the subject. I know there are men here to-day who came here last year hoping to hear this subject fully discussed, and went away disappointed because it was not. There are some here who keep one hundred and fifty ewes, and have forty or fifty lambs at home I know one man here who has this many, and if he will, he can give us a great deal of practical information—much more than I can.

Mr. Dye: In the report from Mercer county allusion is made to sheep husbandry, though that part was not read here this morning. One trouble exists in our county which may not exist in the other counties of the State to such an extent. The trouble with us is the great supply of dogs around us; although three miles from Trenton they come out to where I live. When the population increases as fast as it does, and every family has two or three dogs, I cannot see how we are to remedy the evil unless by modifying the dog law so as to do away with the nuisance. As it is now, it is impossible for the farmers in our vicinity to keep sheep.

Mr. Cubberley: We tried sheep raising too, in our county, but we had to abandon it on account of the dogs killing them.

Mr. Bacon: In our county there is not to-day among the farmers one-tenth the number of flocks of sheep kept there were a few years ago, and this is caused mainly on account of the dogs. If three-fourths of the dogs kept in New Jersey were destroyed, we would be far better off. The best way would be to amend the dog law so that, instead of placing a tax of fifty cents on the second dog, where a man owns two, to make the tax \$5 or even \$10, and in this way, rather than pay for so many dogs, the people would kill them. Where one man keeps a lot of dogs, and does not half feed them, it is impossible for a neighbor to keep sheep without the fear of their being killed by the dogs, unless they drive the sheep into inclosed folds at night, and this, in the summer time, is the worst thing that can be done, huddling the sheep together in the heat.

Mr. Holcomb: Speaking of dogs killing your sheep—I have had my sheep saved several times by the use of a bell. This seemed to protect them. The bells will not keep the dogs away, but on a still night, if the sheep are being chased by dogs you will hear them, and can take steps to protect your flock. That is all the bells are for, because I do not believe the dogs are kept away by them. We also tax dogs in our district when sheep or other domestic animals are destroyed, and I think this is something to be said in favor of sheep raising, for when a man gets paid for his sheep it is not so much of a loss to him.

Mr. Giffin: But you are allowed no more for a valuable sheep than a common one.

Mr. Holcomb: I understand that as the law is at present the sheep is appraised at its full valuation and the farmer paid accordingly. Once I had sold six of my sheep for breeders, and the night following the dogs killed them. My neighbors appraised them at the price I had sold them at, and the Township Committee did not hesitate about paying for them at the price at which they were appraised.

Allow me to suggest that you buy your breeding ewes in the fore part of July, and go right to feeding them a small quantity; this will make a great difference. They should have some grain feed, if it is only a half pint of wheat bran a day; this will put them in good condition for breeding purposes.

Mr. Lippincott: Mr. Fenimore, of Lumberton, has been most successful in raising early lambs. His plan is to buy, in June, fifty or sixty per cent. more ewes than he wants to keep over. He turns the bucks in to these ewes. I forget when he takes the bucks out, but after having the bucks away from the ewes a while he puts them back again, first tarring or smutting the breast of the buck. All the ewes that get marked after the bucks are turned in the second time he sells, because he can then judge that they were not with lamb from the first turning in of the buck.

In the fore part of December he sold fifty lambs at \$9 apiece. He has been very successful in this line of farming, or sheep husbandry, and has done well with his flock.

Mr. Holcomb: I think, Mr. President, that sheep husbandry can be made to pay in New Jersey, without trouble. (Laughter.)

Mr. Haines: In paying for sheep killed, in Medford township, we have adopted the following plan: When the assessor goes around he makes a return of all the dogs in the township, including those he finds in the towns and villages. On the 1st of October, the Township Committee with the Assessor meet, as authorized by resolution, and the sheep bill is reported, (for there is a rule that all farmers who want their bills that year must report by that time,) and the amount of damages so decided on is divided among the owners of the dogs, so as to make a sufficient amount to pay these bills, and have something left. It is the only satisfactory way we have ever found.

Mr. Giffin: Here is a general law:

"And be it enacted, That every person who shall keep or harbor a dog or bitch (above the age of six months) shall be taxed yearly and every year after, for one dog or bitch so kept or harbored, the sum of fifty cents, and for every additional dog or bitch (above the age of six months) the sum of one dollar; which tax shall be assessed and collected by the assessors and collectors appointed for the assessing and collecting of such county or township taxes in the several townships of this state, in the same manner and at the same time as other taxes for the use of the state, county, or township, that shall hereafter be assessed and collected."

I collected the tax every year for eight years, and that is what we collect.

Mr. Taylor: I move it be referred to the Committee on Legislation. Carried.

The Secretary: Mr. DeMott, of the Committee on Reports of County Boards, being unable to serve, the Chair has appointed Mr. F. DeCou, of Mercer, in his place.

Mr. Allinson: I wish to say a few words in regard to the early conception of sheep, in breeding Southdowns: It was my custom to have late lambs, to raise stock for breeders, not for market. I aimed to take the bucks out from the flock before the ewes came in heat, and I found that I could safely leave them with the flock until after many of my neighbors, who engaged in breeding butcher's lambs, had their flocks served. The solution to this seems to me to be that the ewe comes in heat quicker if she starts poor, as the ewes are which are brought in from the West. They come in poor and thin in flesh, and while improving in condition they rapidly come in heat, while if they are kept poor or kept thin they do not come in heat so easily.

Another point—in regard to the age of sheep. I once sold a buck and ewe, one three and the other four, to a party in Massachusetts. They were taken to the fair, and were denied the premium of their class, because they thought them two years older than I said they were. This led me to make an investigation, and I found that the bucks, according to the general rule, showed in a single year a pair of large teeth, and the second year another pair. I found that a majority of the two-year-old bucks had three-year-old mouths.

At the Centennial Exhibition I found two-year-old bucks having four-year-old mouths. I investigated, myself, and satisfied myself that such was actually the fact.

Mr. DeCou : I would like to make a motion. I would like to move that a committee be appointed at this meeting to investigate the feasibility and advisability of establishing a United States Board of Agriculture. I want this committee appointed, and want them to report to-morrow. This committee should be appointed by the Chair.

Mr. McBride : Will the gentleman who made the motion be kind enough to explain to this convention the advisability or the sensibility for the formation of such a National Board of Agriculture as he wishes done ?

Mr. DeCou : We want to know about the general condition of agriculture throughout the United States and with a National Board of Agriculture we will have the means of getting this information.

Mr. McBride : I think, if I am not mistaken, there is already in existence a Department of Agriculture, in charge of a gentleman of the name of Coleman, as Commissioner of Agriculture ; a very able and gentlemanly official he is too. We have also in the Senate and House of Representatives a Committee on Agriculture, to whom are referred agricultural bills offered, and we have also what is called the Agricultural and Dairy Association, which has been of incalculable benefit to the farmers in this country, and I cannot conceive how it is at all necessary to occupy the time of this convention by the appointment of a committee to take into consideration that which we have already.

It is also a matter of no doubt that your representatives will also give you any assistance in their power, and if you ask them what you want I think there is little doubt that they will be perfectly willing to aid you in every way in their power.

I cannot see the least sense in agitating a question when we already have at least three different organizations for this purpose already. There is such a thing as piling this thing up too high. It seems to me it is not necessary to have a committee appointed, and spend our time in doing what we have no use for at all.

Mr. Forsythe : I must take exceptions to the remarks of the

gentleman on my left (Mr. McBride.) This applies equally well to this State Board of Agriculture before it was organized, as to the National Board of Agriculture, that has been moved by the gentleman in front of me, (Mr. DeCou.)

We have now a State Board of Agriculture that comes here and expresses every desire they have, (and sometimes they ask for what they don't want.) (Laughter.)

This organization has been of great assistance to the Legislature of New Jersey, and through it we have been able to impress upon our legislators the necessity of laws such as we require. If we had a National Board of Agriculture we could bring matters through it to the attention of the National Congress, and could do something for ourselves, demanding and receiving, too, the attention the agricultural communities of this country are entitled to receive. This is exactly what we want and should have. This will be an assistance to the gentleman who is at the head of the Agricultural Bureau at Washington. I think it is a move in the right direction. If there is a necessity for the existence of this State Board of Agriculture, there is an equal necessity for the establishment of a National Board of Agriculture, as proposed.

The question being on the motion of Mr. DeCou, it was agreed to.

The Chair: I would appoint on that Committee—Isaac DeCou, Mercer; David Roe, Camden; J. B. Rogers, Essex.

Mr. Cook: I have here a matter I would like to bring before you now, if there is time. I will not be here to-morrow, and would ask an opportunity of bringing it in here. It explains itself.

It is a grievance from the people of Cedar Grove, which I have been requested to bring before you, with respect to a complaint made that the Surgeon who was appointed to take charge of diseases of animals did not attend to his duties. This letter was handed to me and I thought this would be a good time to present it to your notice. I will read the letter to you.

The Secretary: The Inspectors are appointed by the State Board of Health, and this matter should be referred to them.

Mr. Haines: I move that it be referred to the State Board of Health.

The question being on the motion of Mr. Haines, to refer to

the State Board of Health, it was agreed to, and the letter directed to be handed to Dr. Hunt.

Mr. Denise: I move that we adjourn until 8 o'clock this evening.

The question being on the motion of Mr. Denise, it was agreed to, and the Board adjourned till 8 P. M.

EVENING SESSION.

President Burrough: The Board will please come to order.

This is the first time, to my knowledge, that we have been honored with the presence of our Chief Executive, and I take great pleasure in introducing to you his Excellency, the Governor, Robert S. Green, who will preside over your deliberations this evening. (Applause.)

Governor Green: It gives me great pleasure to preside over your deliberations here to-night.

You have with you here a gentleman who will deliver your Annual Address. He is, I am sorry to say, required to leave us again to-night, and I will, therefore, not detain you with any remarks of my own.

I do not know that I could enlighten you at all in regard to the agriculture of our State, for what I do not know about farming would fill a very large book. It might indeed fill a great many large books. (Laughter.)

However, having been a member of the Forty-ninth Congress, I can say that no industry, no department of the government, is carried by a more able and energetic Representative upon the floor of the House of Representatives than is the Department of Agriculture, by the Chairman of the Committee on Agriculture, the Hon. W. H. Hatch, of Missouri, whom it now gives me great pleasure to introduce to you. (Applause.)

[See Address.]

Governor Robert S. Green: Gentlemen, one of our Representatives to the Forty-ninth Congress is now present, and I have no doubt that you will all be delighted to hear a few words from him.

Hon. James Buchanan: Mr. Chairman and Gentlemen:—

I shall not detain you with any extended remarks, if for no other reason than this—I have not had my dinner yet, and I am in the habit of going to my dinner about dinner time. I have simply accepted the invitation to speak to you, in order to bear testimony to the earnestness with which the gentleman who has just addressed you has attended to his duties as Chairman of the Committee of Agriculture in the United States Congress. When I first entered Congress, Mr. Hatch was a stranger to me. He has figured in elections upon a different platform from that upon which I stood. There is no reason why I should say pretty things about him. His interests are diverse from mine, and yet it is simple justice to him to say that no Congress has ever had a Chairman of the Committee on Agriculture that has been so successful in advocating and passing measures in the interests of agriculture as the present Chairman of that Committee.—(Applause.)

I became more thoroughly acquainted with him during the memorable war upon oleomargarine. It seemed to me that he was battling for the interests of this district, and I made haste to array myself under the banner which he held aloft, and from that time forward I found in him a safe leader wherever agricultural interests were concerned. Well, Brother Hatch said that he had promised to say nothing to you about politics. Old fellow, pitch in, and do your very best. Say what you will, the business men of New Jersey are wide-awake and intelligent men, and are capable of sifting what is presented to their attention, and determining the good, the bad, and the indifferent. Now, if you made that promise to anybody, you made it to yourself, because you did not make it to the Governor at the hotel, and you had no chance to make it here. I suppose it is time to go to dinner. (Applause.)

Senator McBride: Mr. President and Governor—I move you, sir, that a hearty vote of thanks be tendered the speaker for the very able and instructive address which he has delivered to the New Jersey State Board of Agriculture.

The motion was put and adopted.

Governor Green: Gentlemen of the Board of Agriculture: I have no doubt it will give pleasure to all of you to be person-

ally acquainted with Mr. Hatch, and I shall be happy to see you in the Executive Chamber, and present you personally to him.

Adjourned until Thursday, January 27, 1887, at 9 A. M.

MORNING SESSION.

Meeting called to order by the President, Hon. Edward Burrough, at 9 o'clock A. M., in the Supreme Court Room, Trenton.

The Chair: I would again beg leave to call the attention of members to the fact that their remarks should be plainly made and clearly expressed, as it is very difficult for our stenographer to hear what is said, and we would like to be able to get the fullest report of our meetings.

I would also repeat my remarks in regard to the announcement of the names of those addressing the meeting. If I am acquainted with the gentleman having the floor I will announce his name, and if I do not it will be because I am unacquainted with the gentleman, in which event I would be glad if any member would introduce him to the Chair. I hope you will kindly bear this in mind, and thus facilitate business, and obviate the necessity of calling for the name of the speaker.

The first business in order will be the calling of the roll of delegates :

Isaac M. Smalley,	Roadstown,	Board of Visitors.
David A. Shreve,	Haddonfield,	Board of Visitors.
Wm. S. Taylor,	Burlington,	Presd't. Exp. Station.
G. H. Cook,	New Brunswick,	Director Exp. Station.
Richard Coles,	Woodstown,	Master State Grange.
I. W. Nicholson,	Camden,	State Grange.
W. R. Ward,	Newark,	State Hort. Society.
E. Williams,	Montclair,	State Hort. Society.
Jas. Lippincott,	Mount Holly,	Burlington County Board.
Joshua Forsythe,	Pemberton,	Burlington County Board.
Edward S. Huston,	Haddonfield,	Camden County Board.
Van Buren Giffin,	Camden,	Camden County Board.
Morris Bacon,	Greenwich,	Cumberland Co. Board.

W. O. Garrison,	Bridgeton,	Cumberland Co. Board.
Wm. Deicks,	Livingston,	Essex County Board.
A. E. Hedden,	Verona,	Essex County Board.
G. H. Gaunt,	Paulsboro,	Gloucester Co. Board.
Thos. Borton,	Mullica Hill,	Gloucester Co. Board.
H. F. Bodine,	Locktown,	Hunterdon Co. Board.
Franklin Dye,	Trenton,	Mercer County Board.
J. M. Dalrymple,	Hopewell,	Mercer County Board.
D. C. Lewis,	Cranbury,	Middlesex County Board.
J. M. White,	New Brunswick,	Middlesex County Board.
D. D. Denise,	Freehold,	Monmouth County Board.
Wm. S. Combs,	Freehold,	Monmouth Co. Board.
Wm. F. Ely,	Madison,	Morris County Board.
J. Walter Pancoast,	Sharpstown,	Salem County Board.
J. W. Dickinson,	Woodstown,	Salem County Board.
D. C. Voorhees,	Blawenburgh,	Somerset County Board.
W. A. Stiles,	Deckertown,	Sussex County Board.
D. C. Crane,	Roselle,	Union County Board.
D. T. Haines,	Medford,	Burl. Pomona Grange.
H. I. Budd,	Mount Holly,	Burl. Pomona Grange.
David S. Adams,	Mickleton,	Glou. Pomona Grange.
F. B. Ridgway,	Mullica Hill,	Glou. Pomona Grange.
Isaac H. Hoffman,	Locktown,	Hunt'n. Pomona Grange.
M. D. Dickinson,	Woodstown,	Salem Co. Pomona Grange.
E. L. Borton,	Woodstown,	Salem Co. Pomona Grange.
Michael Taylor.		

The Chair: The first business on our order of business will be the reports of committees.

Is the Committee on Credentials ready to report?

In this connection I would state that gentlemen who are entitled to their compensation will please call on the chairman of that committee, Mr. Williams, and submit their bills. These bills should be handed in this afternoon.

As the Committee on Credentials is not quite ready to report we will call for the Committee on Resolutions. Have they anything to report?

Mr. Budd: The following resolution in regard to the Experiment Station we beg leave to report favorably:

"WHEREAS, We have been informed by Prof. Cook that certain fertilizer manufacturers have combined to prevent such stations as continue to publish the commercial valuation of fertilizers from receiving national aid;

"Be it resolved, That we believe the chief value of the station reports depends upon their commercial valuations, and we request the State Board of Agriculture to strenuously oppose in Congress any provisions that will prevent such Experiment Stations as publish valuations from receiving their just portion of the National aid, as proposed in the Hatch Bill."

We also beg leave to report favorably the following in regard to appropriations for Agricultural Fairs :

An Act Relating to Annual Appropriations to Agricultural Societies for the Encouragement of Production.

SEC. 1. Be it enacted by the Senate and General Assembly of the State of New Jersey, That there shall be annually appropriated and paid to the incorporated agricultural societies of this State the sum of twenty dollars for every one hundred dollars each society shall have paid in premiums, not including therein purses or premiums for horse racing, trials of speed, or any other kind of recreation or amusement.

SEC. 2. And be it enacted, That it shall be the duty of each agricultural society to make up and arrange a list of premiums, which shall, in the discretion of said society, be most conducive to the development of the best agricultural, horticultural and mechanical interests of the State, such premiums to be awarded to exhibitors at the next ensuing fair of each agricultural society.

SEC. 3. And be it enacted, That it shall be the duty of the secretary of the state board of agriculture to annually forward, during the month of November, to each incorporated agricultural society, suitable printed forms for a statement in detail of the amount of such premiums, and the objects for which they have been paid, accompanied by proper vouchers, if required, which statement shall be signed and sworn to by the president, secretary and treasurer of the society, and returned to the Secretary of the State Board of Agriculture, before the first day of December following, who shall thereupon certify to the Comp-

troller the amount to which each society is entitled and proper orders on the state treasurer shall be drawn for payment of the same, and any society failing in any year to return its statement before the date above limited shall not be entitled to any appropriation for that year.

SEC. 4. And be it enacted, That the act entitled an act to promote the agricultural interests of the State of New Jersey, approved March 30th, 1874, be and is hereby repealed.

In this connection I would submit the following table, showing the amounts paid in premiums by the different agricultural societies in the State of New Jersey, other than premiums for speed :

State Agricultural.....	\$6,000 00
Burlington County.....	6,000 00
West Jersey.....	1,031 00
Cumberland County.....	2,000 00
Vineland.....	1,000 00
Moorestown.....	917 75
Egg Harbor.....	310 05
Morris County.....	1,000 00
Hunterdon County.....	1,250 00
Somerset County.....	1,550 00
Sussex County.....	1,018 00
Monmouth County.....	3,000 00
Union and Middlesex Counties.....	500 00
Total.....	<hr/> \$25,576 80
20 per cent. of this amount would be.....	\$5,115 36

The amount needed from the State to pay twenty per cent. of this cannot exceed this year \$6,000, under any emergency, under this bill as offered.

Assembly Bill, No. 16, is also reported without recommendation.

[See Bill.]

The paper introduced by the Member from Gloucester county, in regard to the legal rate of interest, we would also report favorably :

“ WHEREAS, As the object of the State Board of Agriculture of

this State is to advance the agricultural interests of the State in various ways, and

"WHEREAS, As agriculture is the basis of all other occupations, and when it is remunerative, prosperity, as a rule, exists with the other business interests, and

WHEREAS, When shares of bank stock and other moneyed institutions are offered for sale there is a demand for them, and there are instances of their selling for more than double their par value, while at the same time there are more farms in the market than can be found purchasers for them, and believing that a reduction in the legal rate of interest would do much to correct this difference, and

WHEREAS, We believe that the State Board of Agriculture would have an influence with our State Legislature were it to memorialize them to reduce the legal rate of interest; therefore,

Resolved, That this State Board of Agriculture, now in session, do memorialize the Legislature of this State, now in session, to reduce the legal rate of interest to five per cent."

The Chair: You have heard the report. If there is no objection offered we will accept it, and the committee will be continued.

Mr. Blish: I am rather opposed to that resolution in regard to the legal rate of interest. In my opinion such a resolution is hurtful, and it is not wise to adopt it. Money is a commodity, and the purchasing power of it differs materially in different parts, and at different times. When you reduce the interest to five per cent., and continue your present usury laws, you are doing the worst thing possible, in my estimation. You are simply discouraging honest capital and encouraging the brokers, or so-styled gamblers. It is a fact well known by all here that when money is tight, as it is called, it will command a high price, and the borrower has to have it sometimes. They can't get it for the legal rate of interest when it is tight, and what next? The borrower has to have it and he has to pay a premium through a roundabout way to get it.

If you pass a five per cent. law you simply scare away the honest money lender, and the borrower is crowded into paying a bonus, as it is called, in order that he may get the money he is obliged to have. It cannot be otherwise, with your present usury

laws, as they now stand. I am afraid it will not work. You can look at all the States having such laws, and you will find that they are suffering. Money sometimes costs the borrower in those States from one to perhaps two per cent. a month. Six per cent. a few years ago was, I think, the lowest money ever came in New Jersey. It has been higher.

When you legislate the money market, and follow the ups and downs of it, you might as well legislate on the price of grain. You cannot buy grain when it is not here to be bought, and you cannot do it with money. You cannot set a price for grain and say it shall only be so high, for if it is scarce you can't get it.

You cannot buy grain at any legal standard price when the supply is low. Neither can you buy money when it commands a higher price elsewhere. Such legislation, I think, is unwise.

Mr. Crane: It is my experience that the law, as it now stands, is better than it would be if changed, for these reasons. I know that in our county it is almost impossible for a farmer to get money from a banking institution, or from the insurance companies on farm security, and it is to-day a well-known fact that there is money enough to be had at five per cent. if you can give the proper security. It may even be had as low as four per cent. on proper security. Suppose we change the law, and make the legal rate of interest five per cent. If you do this you will make it almost impossible for farmers to get money on farm securities. Now the law is, that six per cent. shall be the legal rate of interest, and you can get money at this rate if you have the proper security to offer for it. Make it unlawful for the money-lenders to take six per cent. and you endanger us. I would not like to see anything done to endanger the prosperity of the farmer, for if you do that you are making a vital mistake. I have been a payer of interest heretofore and I know how it is to have a mortgage to keep up.

Let the law remain at six per cent. and do not scare away the honest money lender, and encourage these money gamblers.

Mr. Haines: Judging from the arguments we have heard the more we have to borrow the better off we are. (Laughter.) But from an agricultural standpoint, we find things quite different from the way it has been given to you. I don't propose to put the security that a farmer can offer against any class of specula-

tive security that may be pledged for the redemption of money. I claim upon the very fact that land is the kind of security it is that we should be able to borrow money cheaper than anybody else, for land ought to be the greatest and grandest and best security that could be offered for the advancement of money. But what is the general custom? We are obliged to gauge and measure our ability to borrow money by our ability to pay the interest for its use. Land does not stand as good a security in the market as the speculative and gambling schemes. We cannot look at it from any other standpoint than this.

There is another thing? I know that farm capital pays three-fourths of the whole expense of the government by taxation that other classes of property escape. I would like to ask this question. You put \$20,000 in land, and at the last census report the gross earnings from land at that time were but three per cent. but put it in a banking institution, and what is the result? It is sure to average earnings as high as ten per cent.; there you have \$2,000; on the other hand you have, as gross earnings, but three per cent., or \$600, making a difference in favor of the banking institution of \$1,400 in this calculation. Is this fair to the farmer, who produces the food and raiment of the country? That is what I would like to ask.

It has been said it would not do to have the rate of interest reduced. In New York the rate is now six per cent.; so it is in Pennsylvania. That is no argument. There is money coming into the lower end of the State as low as three and a half to four per cent. On the other hand I was told by the Finance Committee of the Legislature that they could loan all the money wanted at five per cent.

I cannot see any reason why the rate of interest should not be reduced. As it is now a farmer can make more money out of his money than he can make out of his land. Whether this is unfortunate or not I will not say, but it is not fair and not just to the farmer.

Mr. Giffin: There are two points in connection with this matter that I would like to make.

This question came up before the Agricultural Board of Camden county at its annual meeting, and after some little talk it was finally voted down, and I address you at this time in opposition

to my brother from Medford, in sympathy with the two first gentlemen who spoke.

Now, according to the arguments we listened to last night, are not farmers, situated as we are, enjoying the privileges of the best location in the United States? I think it little becomes us as farmers to attempt to say to the other States that we are not capable of paying an equal rate of interest with them. Are we to say to the State of New York, and to the State of Pennsylvania, that we cannot afford to pay the legal rate of interest as those States right adjoining us on the North and West? Are we to say to the Western States that we will allow eastern money to go out there to them, where they pay seven and eight and nine and sometimes as high as ten per cent. interest, when we have the best location of any State in the United States, and are not able to pay six per cent. interest? If you want to encourage the driving of capital away from our State this measure will certainly bring the desired end. Do we want to encourage this at the time when we have already reached the greatest depression in other matters? This is not the time to reduce interest. This would be the time to stand on our feet, as we have been able to stand during these depressions.

Notwithstanding the legal rate is six per cent. I have no trouble to borrow money at a less rate than that. It is a healthy condition for us, as a people, to be in, when the legal rate of interest is higher than the market price of money, and I do not think we want so change the law in regard to it, making it five per cent. It is far preferable that money should be in the market for a less rate of interest than the legal rate, and we should feel glad that this is as it is. Therefore, I say let us stand up with our adjoining States, with the Western States, with everybody, and say we are able to pay our legal rate of interest if need be; that we are able and willing to compete with them in this matter.

Mr. Voorhees: I am very much surprised that any body of agriculturists, such as this State Board of Agriculture, should attempt to look at this matter from any other standpoint than from that of the agriculturist's standpoint. It seems to me they have argued from the position of money lenders, rather than from that of borrowers. We want to look at this matter from the standpoint of the borrower, and I can see no reason why we should pay more interest as a matter of pride.

If a rate of five per cent. interest is going to injure the farmer, I, for one, want to be injured that way every time. (Laughter.)

I can see no reason why these gentlemen should wish to put a fictitious value on money; there is nothing desirable in such action. The gentleman who has just spoken says that, as a matter of pride, we don't want to appear unable to pay less than the borrowers of money in other States. Why should we wish to compete with them on such ground? The Western farmer is compelled to pay two per cent. a month—do we want to pay that rate? I say, decidedly not. Many people, when they buy a horse, put a fictitious value on him—far more than he cost or is worth. That does not enhance the value of the horse, though they would want to make it appear so, I suppose. Call things by their right names, and place no fictitious values on money or on any other commodity the farmer has to do with. Five per cent. is a just rate, the way money is selling now for other securities, and such a bill would be a just and fair one. He says he can borrow all the money he wants at five per cent., even though the legal rate is six per cent. Is that any reason a fictitious value should be placed on it? I say no; call things by their proper names, and let us have such a bill passed by all means, for a five per cent. rate is all the New Jersey farmer can afford to pay for the use of money. If he can borrow money at five per cent. all the more reason why the law should be for a five per cent. rate of interest.

Capital goes begging, and it is a hard matter to invest money safely. Capital is seeking investment at rates way below six per cent., the legal rate in New Jersey, and plenty of money may be had at five per cent. on fair security.

There is no better class of investment to-day than farm lands. Is it the idea that this bill should not be passed because the farmer is already down, and we want to keep him down? If that is the idea, why not increase the rate of interest—keep it up, and make the taxes as heavy as possible—put them up in the very top notch. Pile on more and more and keep him down. If these people come here as agriculturists they should be in favor of reducing this rate of interest; if they are here as capitalists (laughter) then they want the rate of interest kept up, of course. If they have the interest of the farmer at heart they

will support such a bill for the reduction of the legal rate of interest.

I must say I am surprised that a resolution of this kind cannot be passed in a body of agriculturists such as this New Jersey State Board of Agriculture.

Mr. Blish: I don't see why they are anxious to pass a law reducing the rate of legal interest when they all acknowledge that they can now borrow for a lower rate than the legal six per cent. What do you want to pass such a law for? To me it sounds as if the bill was very much in the interest of the money-lenders, for when the farmer finds he cannot get money on farm security at five per cent., as would probably be the case, the broker would charge him one or two per cent. a month bonus for the accommodation, and the farmer would be worse off than now.

These money-lenders have money to lend, and when it gets a little tight they make you give an extra one or two per cent. for taking the risk of breaking the usury laws. You say you can borrow money now at five per cent., and I have no doubt you can—so what is the necessity for the passage of such a law? One gentleman says he gets all the money he wants at five per cent., or less than five per cent., and there are other farmers who can do the same, and now they want to pass a law, and for what? There is a usury law which prevents you from paying more than that, or which prevents them from charging you more than a certain rate per cent. interest. It is a good thing when money can be borrowed at a less rate than the regular legal rate. There is a law to prevent the money-lender from charging more than a certain rate, but no one can say he shall not go down below the legal rate of interest. He can go down to four per cent. or even down to one per cent., if he wishes, and no one can gainsay him. There is no law to prevent his doing so. This law should not be. You want it for what? It is a superfluity, in my judgment.

It is saying we are a weak agricultural board or community and that we want to reduce something—we know not what. (Laughter.)

Mr. Borton: It has been said that we should be our brother's keeper, and I admire the generosity of the parties who spoke, in being willing to take care of the interests of the farmers. This is intended to care for those who are not able to take care of

themselves. The person who is well fixed in this world's goods, and has plenty of money at his command, goes where he sees fit, and does as he sees fit, and needs no brother for his keeper. He can borrow all the money he wants, but the person in moderate circumstances is not able to do this. It is in the interest of this latter class of people that this measure is introduced. Those who are well fixed can take care of themselves; it is the farmer in moderate circumstances whom we want to help by the passage of such a law. It is this latter class we want to reach by such legislation. It is the class of farmers who are in moderate circumstances who need help in this direction, and this is the class we want to assist, if it is possible to secure the passage of such legislation. People who have money to lend are cautious about lending it to them. The well to do parties can always get all the money they want, but the others cannot. We are here in the interest of the farming community, and to take care of his interests as a farmer, and we suggest taking one per cent. off the legal rate of interest, because we think this will be a great help to him. We do this and by doing it we put into the borrower's pocket, according to the last census, \$600,000 the next year.

I claim there is nothing we can do to advance the interests of the farmers of this State more than will this bill to reduce the legal rate to five per cent.

The question being called for, the Chair was unable to decide by the ayes and noes, and a rising vote was called for, resulting in the adoption of the resolution—54 in favor, 21 opposed.

The Secretary: The committee also report favorably the act in relation to appropriations to the agricultural societies of the State of twenty per cent. of the amounts of premiums paid, except for trials of speed.

(See under preceding report of Committee on Resolutions.)

Mr. Henry I. Budd: As that matter came from Burlington I would like to say a few words about it. As far as Burlington county is concerned we do not care particularly, although it was offered by one of the stockholders of the Burlington County Agricultural Society, yet there has been, for a great many years, grumbling because of the large amount appropriated to the State Agricultural Society. Many of the counties in the southern part of the State think they should have more assistance in this di-

rection, believing that such aid would greatly advance the interests of the different counties in which these fairs are held, by enabling them to offer premiums that would induce the farmers to enter into competition. They think that the three thousand dollars paid to the State Fair is of little use, because it is so far away from them. They think such an appropriation would benefit them more if divided amongst all the agricultural societies.

As is well known quite a number of these fairs are by no means prosperous, and their condition, financially, is such that they are not able to induce the farmers to make exhibits of their products by offering them sufficient premiums to enter into competition.

Of course these fairs cannot be made successful without such competition, as every one connected with a county fair knows, and moreover, premiums must also be offered so that manufacturers will also be willing to exhibit their products.

In our county we have advanced the interests of the farmers more by this Burlington County Fair than by any other process I have ever known of.

Many of the farmers in Burlington county have engaged in a competition in this way who would never have done so had it not been for this rivalry we have fostered by offering sufficient premiums to induce them to compete. I believe that no act could be passed that would do so much good for the farming interests of New Jersey as this one act we have offered. The county fair comes directly in contact with the people.

It is said by some that we cannot insist on this because the State is practicing economy, and this is not in accordance with this principle—that this money should not be appropriated on this account.

It is all well enough to talk about and practice economy, but when the State can afford to spend a hundred thousand dollars or so for a military picnic and junketing party I think she can well afford to appropriate the \$6,000 asked for (and this is the outside amount) by the agriculturists of New Jersey to aid them in their industry, especially when the farms of New Jersey pay so much of the expenses of the government, which we as farmers are taxed to make up.

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As far as we in Burlington county are concerned—as far as the Burlington County Agricultural Society is concerned—we can do without it, but we ask it for the benefit of the poorer county fairs, which are having such a hard struggle to make things go.

Mr. Williams: It appears to me that the proper standpoint from which to look at this matter is this. Has the money appropriated heretofore for similar purposes been of the benefit to the farming community it was intended it should? If this is admitted then the same amount would be appropriated again, and perhaps the same amount distributed over the State would be equally beneficial. If it has been of no benefit then why continue it any longer?

That is the proper way to look at it, I think. I can bear testimony to the influence the Burlington County Agricultural Society's Fair has exerted on the community. I say that the Burlington County Fair is the best and grandest thing—the greatest fair in the State,*and perhaps in any other State, too. I can remember, too, when they were sadly in debt.

This fair not only exerts an influence in Burlington county, but in other counties, and in other States. For several years there have been more exhibits from other States than at any other fair. I have attended all their fairs, and I know what I speak of. It is one of the greatest things for this part of the State that could be had, and has done incalculable good for the farming community, not only of Burlington county, but of other counties of this State, and to the farming community of other States, too. It is visited by people from all over the State of New Jersey, and by many people from other States. Their fair has a good name, and her name stands high.

If this money that is desired to be appropriated has been beneficial before it will be of still greater benefit if more widely distributed, and I, for one, certainly think this should be done.

Our people are satisfied, and I am perfectly satisfied that our exhibition has been a great benefit to us from the time it was started up to the present time. We are satisfied to go according to our own resources if need be, but we think that as the State is willing to pay \$3,000 to the State Agricultural Society for their State Fair, they should also be willing to take some care of us, and lend us a helping hand.

We would be glad if we could make heavier premiums, and thus secure greater exhibits, more competition, more interest, and more rivalry among farmers, and thus be of greater benefit to all in Salem county.

I should vote for this measure, as I believe we could then do more work than before.

Mr. Rogers: In considering this question of extending State aid to our agricultural fairs the first point to be taken into consideration is, what relation does an agricultural fair bear to the agricultural community.

I think you will agree with me that it bears the same relative position that a Kindergarten school bears to our higher forms of education. It is the primary school, in which many receive their education. That being so we should seek to encourage it in all ways which we can, and owing to the diversity of the premiums offered I cannot see how the State can possibly object to extending aid to that which can but be of great benefit to the entire community. I must say that I most heartily concur in the sentiment expressed in the resolution as offered by the member from Burlington county.

The question being on the adoption of the resolution, it was agreed to.

The Secretary: The Committee also report favorably the following:

(See report of Committee on Resolutions, preceding, in regard to Experiment Stations.)

The Chair: What is your pleasure in regard to this resolution?

On motion of Mr. Stiles, the report of the Committee was agreed to.

The Secretary: The bill next on hand is that in regard to baskets being charged for when taken away, as given in Assembly Bill No. 16, presented by Mr. Roe.

The Committee reports it back to the Board without recommendation.

The Chair: If no objection is offered we will refer it back to the Committee on Legislation. So ordered.

The Secretary : We have here a revised bill governing this State Board of Agriculture. It is a revision of the old law, making some needed changes, and also doing away with a number of inconsistencies as the law now stands. I move that this be referred to the Committee on Legislation, with instructions to report this afternoon.

The Chair : If there is no objection it will be so ordered. Agreed to.

Mr. Ward : I have here a matter I wish to bring to your attention, and if there is no objection will read it.

At the Annual Meeting of the New Jersey State Horticultural Society, held in the Assembly Chamber, December 15th and 16th, 1886, the destructiveness of the English sparrow engaged our attention, and the following resolution was unanimously adopted :

Resolved, That the Directors of the State Board of Agriculture be appointed a committee for the purpose of asking the Legislature of this State to enact a law placing a bounty of two cents for each and every English sparrow killed in this State, to be paid by the several Justices of the Peace throughout the State.

That the committee so appointed shall present this resolution to the State Board of Agriculture at its next session, and request them to appoint a similar committee to act with them in securing such legislation.

E. WILLIAMS,

W. R. WARD,

Committee.

Signed.

E. Williams, Sec'y."

I ask to have a similar committee appointed by this State Board of Agriculture, to act with our committee in securing the needed legislation.

The Chair : I will name on that committee—

Wm. A. Stiles, Sussex.

John E. Darnell, Burlington.

We will continue our programme. Mr. Lanning, of Trenton, will address you in regard to roads, and the manner of caring for them.

Mr. Lanning : Mr. President, and gentlemen of the New Jersey State Board of Agriculture :

The subject assigned to me necessarily involved to some extent, an examination of the statutes of New Jersey, concerning the roads, and the manner of their care taking, as well as the manner of appointing proper officers, levying and collecting road taxes, making the repairs, and methods of doing same, &c., and I have gone through these statutes very carefully, in order that I might give you a clear insight as to the methods employed at this time in caring for the public roads of New Jersey.

(See Paper.)

The Chair: What is your pleasure in regard to Mr. Lanning's able and instructive paper? Have you any questions to ask the gentleman?

I would like to state that I have seldom listened to a more able, more instructive, more interesting, or so well prepared a paper. It has been a treat to us, and I think we owe the gentleman a vote of thanks for the time and trouble he must necessarily have expended in writing such a paper as we have just listened to. This paper, when published in our annual report, will be as good as a digest of the laws of the State of New Jersey pertaining to roads, and every one should make it his business to secure a copy of the report when published. It is not only a reference to the laws themselves, but it treats entertainingly and exhaustively of the manner in which these laws are applied. Each one of the members, and each farmer, in fact, should be sure to get a copy of the annual report of this State Board.

Mr. Ridgway: One point I would like to ask about. That is the matter of opening roads when they are drifted with snow. I believe we are working, in our township, directly under the statute you have referred to in your paper, except where we are blocked with snow. Sometimes we have had this done, and sometimes the overseers have stopped this work because the people found too much fault with them.

It seems to me that overseers are obliged to open the roads when drifted with snow. Are they not just as much obligated to open the roads when drifted with snow as when a tree or other obstruction is in the road?

Mr. Lanning: The overseers are required by law to keep the roads in passable condition the year round, no matter what the

obstruction may be. Of course the roads are open for the public use and they must be kept so the year round by the overseers. If they do not do so they are indictable. If they are not supplied with the necessary funds they can resort to the labor plan, calling out the farmers to help them to do the work. If he does not care to warn out the inhabitants he can do the work alone if he wishes. I think the plan of warning out the inhabitants would be the plan to resort to in such cases as this, when there are not sufficient funds in the treasury to warrant the work being done by hiring men to do it.

Mr. Blackwell: Was there not a law passed two years ago that this work was to be done and the tax assessed to pay for the work?

Mr. Lanning: I am not certain that such an act was passed; it may have been.

Mr. Blackwell: I am not certain about it either, but I think such was the case. The Township Committee, I think, is empowered to borrow the money, if necessary, and pay it out of the taxes collected the next year.

Mr. Giffin: This road question is a long and difficult one; it reaches all over the State, and is a question of the very greatest importance to us all as farmers. It has cost the farmers a great deal of money, and will keep on doing so, I presume. We expend an immense amount of money for the repairs to our roads, and we get no adequate return.

I believe, for one, that it would be well to have all the laws on this subject repealed, and other laws passed more nearly bearing on the subject.

Would it not be better to have the supervisors appointed, or in a large township have two supervisors appointed, and the township divided into two districts, each supervisor having charge of his own particular district as assigned to him. Then when repairs to his district were necessary would it not be practicable to have him notify the farmers in that district near by that these repairs were necessary, and allow the farmers to turn out, according as the supervisor might direct, and these farmers most directly interested in that road turn out and make the repairs, the supervisor to keep charge of the time each farmer made with his men or teams, and then the township to pay them for the work

done. In this way the farmers will get what they pay for, and we will know that the money is properly expended.

As the law now is throughout the State, the overseers employ broken-down labor—generally such men as spend the greater part of their time around the taverns—men who are unfit for a day's work, and who cannot earn what is paid them. This is one reason why so little is had for the money paid.

I think the laws should be changed, so that farmers could earn this money, and be paid for the work they are taxed to pay for. Give us a law of this kind, and I believe it will be far more satisfactory than the present method of paying out money for that labor which gives us a very inadequate return.

Mr. Haines: In reference to the report of the gentleman, Mr. Lanning, I wish to refer to one of the points he makes in regard to the inadequate method of securing the proper returns for money expended.

Going back six years, we, in our township, (Medford,) were spending every year three or four thousand dollars on our roads, doing work that did not show, and that did not do much good. This we were obliged to do year after year. We kept going over the same ground, with nothing at all to show for it. Much of the work was expended in the repairing of washes and such things. We got tired of this manner of doing things, and the last three years we have adopted another plan, that of permanent improvements, instead of this slipshod way of working. Our idea was to gravel our roads and put them in first class condition, a little at a time, as we could afford to do so, and although we had no gravel within seven or eight miles of us, we have decided to get it. In the town meeting we make an appropriation each year of about \$1,500, and with that money we buy gravel. This gravel comes to us on cars from some place on the Camden & Atlantic Railroad. We get it for about fifty cents per ton, and we get ten or fifteen hundred dollars worth at a time. We have been doing this now for the last three years, and we are getting as good roads as any one could ask for—as good as turnpike roads, and better than any turnpike roads we have in our neighborhood. By this permanent improvement plan, we expend no more money than we have been expending in other years, and

we have from five to seven or eight miles of better roads than most of our neighboring townships can boast of.

The material we use is a very singular compound of gravel, and I can only say that it makes the best of roads. It does not hold water, and packs as hard as rock, making a road equal to the best.

It has been clearly proven that it is decidedly to our advantage to make these improvements as we have been doing. We are getting good roads gradually, and have something to show for the money we expend.

I would also say that we make an arrangement so that the Township Committee pay for the gravel and then the farmers turn in and help haul it for nothing, and in this way we get it distributed.

The Secretary: I move a vote of thanks to Mr. Lanning for his very able, instructive and interesting address.

The question being on offering Mr. Lanning a vote of thanks, it was agreed to unanimously.

Mr. Horner: Before this matter is entirely disposed of I would like to call the attention of the State Board of Agriculture to an important matter.

It is in reference to the very many dangerous crossings of railroads at grade. This matter has been suggested to me by a railroad crossing I am frequently obliged to travel over, and I think this State Board should take some measures to remedy these matters also.

Although we have repeatedly called the attention of the railroad authorities to the matter, such action seems to have no weight with them, and they do not pay the slightest attention to our requests.

If in order, I would, therefore, like to offer a resolution bearing directly on this subject.

"Resolved, That this meeting ask the Legislature to enact a law giving the Board of Freeholders in the several counties of this State authority to compel the railroad companies to place watchmen or gates, or both, at crossings which, in their opinion, may be deemed sufficiently dangerous to warrant the same."

The Chair: If there is no objection offered the resolution will be referred to the Committee on Legislation. So ordered.

The Chair: The next in order will be an address on "Our Dairy Interests," by the Hon. Edward Burnett, President of the Bay State Agricultural Society, of Southboro, Mass.

I take great pleasure in introducing the gentleman to this State Board. (Applause.)

(See Address.)

The Secretary: I know the members of this State Board, and others who are here with us, have been deeply and intensely interested in this discussion, and in the talk Mr. Burnett has given us, but I am also sorry to say we are getting way behind with our work.

I move that a vote of thanks be tendered Mr. Burnett for the very able, instructive and interesting address he has given us, and regret that we cannot give him still more time to talk.

The question being on the motion of Mr. Taylor (Secretary) it was unanimously agreed to.

The Chair: I take pleasure in extending you the thanks of this State Board, Mr. Burnett, and regret that our time is limited so that we cannot hear more of it.

The next business is an address by Dr. E. M. Hunt, Secretary of the State Board of Health, Trenton, on "Contagious Diseases affecting our Domestic Animals."

I take pleasure in introducing Dr. Hunt to this State Board.

(See Dr. Hunt's address.)

The Chair: I would suggest, in regard to the ideas advanced by Dr. Hunt, that he be invited to appear before the Committee on Legislation and lay his plans before that Committee.

Mr. Dickinson: I move that we suspend the order of business, and call for the report of the Committee on Nomination of Officers for the ensuing year.

The Chair: That will require a two-thirds vote.

The question being on the motion of Mr. Dickinson, it was agreed to.

The Chair: We will call for the report of the Committee on Nomination of Officers for the ensuing year.

Mr. Lippincott: Mr. Chairman, I will read it:

For President—Edward Burrough.

Vice President—Wm. R. Ward.

Secretary—W. S. Taylor.

Treasurer—Franklin Dye.

EXECUTIVE COMMITTEE :—Dr. G. H. Cook, D. D. Denise, and M. Bacon ; also President, Vice President, Secretary and Treasurer.

Signed for the Committee on Nominations :—

J. LIPPINCOTT, Chairman.

M. D. DICKINSON, Secretary.

Mr. Dickinson : I move that these be officers of this State Board of Agriculture for the ensuing year.

(Mr. Dickinson also puts the motion, which is unanimously carried.)

The Chair : On behalf of myself, and my fellow associates, I will say that if our actions in the past have met with your approval, it is all the satisfaction we ask at your hands. (Applause.) In the future we will also endeavor to serve you as in the past, and trust our actions may meet with your approbation then also. Let us hope that we will all be able to meet here again this time next year, without one single face missing. (Applause.)

The Secretary : I have a resolution here in relation to the Agricultural Experiment Station, which Mr. Hatch informed me last evening he would be pleased to receive. We can send it to him if the Board so directs. It is as follows :

“ Resolved, That the establishment of National Experiment Stations, as provided in Bill No. 2933, meets with the hearty approval of the farmers of New Jersey, and we would respectfully urge Congress to speedily pass the same, as we believe it to be truly in the interest of agricultural advancement in this country.”

Mr. Nicholson : I move that the resolution be adopted, and that the Secretary be instructed to forward a copy of it to Mr. Hatch—that it be adopted without reference to the Committee on Resolutions.

The question being on the motion of Mr. Nicholson, it was agreed to.

The Chair : Our next business will be an address by J. V. Bragden, of Cape May, in regard to “ The Bragden Cure for Hog Cholera.”

I take great pleasure in introducing to this State Board Dr. J. V. Bragden. One word of explanation, first, however.

In presenting this matter to you, the question of hog cholera is one which interests us all, and I think I can safely say that probably the Chair has suffered as much loss from this cause as any one else. If we have found a specific we are very glad to have it generally known among our farmers, and for this reason we have invited Dr. Bragden to come before this State Board and tell us what he knows about it.

Mr. Bragden: I was kindly invited here by the President of your Board, but I don't propose to go into any discussion of the hog cholera, or swine plague question.

Your President suggested that a resolution be offered that a committee be appointed to examine into this matter, and report what they thought of the remedy I had to offer. I should be glad to have such a committee appointed, and should be happy to confer with them. I will meet you at any time you may name. I have here innumerable testimonials, which you are at liberty to examine if you wish, some of them from men well known, and some of them from a distance.

This is one from Mr. H. A. Hughes, of Rio Grande.

RIO GRANDE, N. J.

To the Hon. N. J. Coleman, Commissioner of Agriculture, Washington, D. C.:

DEAR SIR:—This letter will introduce to you Mr. J. B. Bragden. Our pigs were violently attacked with hog cholera since you were here, and we lost a great many cases; all the best of the herd is a total loss.

Mr. Bragden came here a perfect stranger to me, and said he thought he could cure those that were left. There were about one hundred and fifteen sick hogs. In less than a week he had them all well, and we have not lost a single hog that took his medicine.

Knowing you are so much interested in trying to eject this disease out of the country, I think this should be brought to your notice.

Any further references you may wish to make I can give you myself.

If you wish to hear anything further from the herd of hogs we will be happy to give you any other information at any time.

Respectfully yours,

(Sig.) H. A. HUGHES.

Mr. Bragden: I am not prepared to furnish any plan, or give any mixture here, but I am willing to submit it to a committee appointed by this State Board of Agriculture.

I have spent two years in finding this remedy, and it has proven, in every instance, a success. There has not been a single failure where the medicine has been properly used.

The hogs at Rio Grande were in a fearful condition—I never saw any worse. I have a man with me here who had charge of about forty of their herd of hogs, who can tell you about them.

I think they buried eleven the morning I arrived there, and they have never buried one of them since. I went there three times.

Dr. Hunt: Is this remedy a patented invention?

Mr. Bragden: No, sir; it is not.

Dr. Hunt: It seems to me it would be wise to appoint such a committee as Mr. Bragden asks for, but I would suggest that it be an expert committee, in part, at least.

I have examined the remedy, and know precisely its ingredients, and also know what it costs to make it, and don't feel afraid to speak of it in detail. I hope Mr. Bragden's suggestion will be taken, and if it will stand the test I think it should be recommended to the farmers.

The Chair: Do you make that as a motion that such a committee should be appointed—an expert committee?

Dr. Hunt: I will make that as a motion, and would say in addition that the committee should be composed of men of experience, with at least two chemists as members of the committee.

Mr. Williams: I suppose it is in order to ask whether this is to be referred to this committee for investigation and analysis, or to test it, or is it for both?

Dr. Hunt and Mr. Bragden: Both.

Dr. Hunt: The idea would be for them to make a tabulated series of experiments, uniting on a statement of the facts as brought out by their investigations.

The Chair: By whom is that committee to be appointed?

Dr. Hunt: By the Chair.

The Chair: I will consider that and announce the appointments later on.

Mr. DeCou: I move we adjourn until 2 P. M.

The question being on the motion of Mr. DeCou, it was agreed to.

Board called to order at 2 P. M. with Hon. Edward Burrough, President, in the chair.

The Chair: Is the Committee on a National Board of Agriculture ready to report?

Mr. DeCou: We consider the time too short to make out a report in accordance with the magnitude of the subject you have placed in our hands.

We would say, however, we consider the establishment of a United States Board of Agriculture not only feasible and advisable, but of the utmost importance; the farmers are being well organized, with subordinate farmers' societies, next coming the County Boards, then the State Board, and there we stop. Now, what we want is a United States Board of Agriculture.

We further consider that when it is properly established by farmers it will be not only important but indispensable, and we think that the committee to have charge of this all important subject, to forward its interests, should be active men, authorized by this society to correspond with, or visit in person, like societies in other States, and do whatsoever they can to forward this movement as fast as possible.

(Signed)

ISAAC DECOU,
DAVID ROE,
J. B. ROGERS,

Committee.

Mr. Budd: I move that we accept the report of the committee, and that the committee be discharged.

The question being on the motion of Mr. Budd, it was agreed to.

Mr. Pancoast. (Reads):

WHEREAS, we believe that much personal and some other property now escapes taxation, to the manifest disadvantage of the agriculturists;

Resolved, That the State Board of Agriculture appoint a committee to report to the next annual meeting of the Board a tax law that will remedy these defects, and be constitutional.

I move its adoption. (Laughter.)

The question being upon the motion to adopt it was agreed to.

Mr. DeCou: I would like to ask a question in regard to the Committee on the National Board of Agriculture; are we discharged, or do we still stand as that committee?

The Chair: The committee was discharged.

Mr. DeCou: If we are discharged I move the appointment of another committee. The desire is to refer to a committee to report at our next annual meeting, in the meantime corresponding with other societies, and doing all in their power to advance the interest in such a movement in our behalf.

The Chair: Our former action will have to be reconsidered if you wish to do that. The committee was discharged by the motion that accepted your report, and if we want to take other action we must reconsider that motion. As it now stands it has been referred to the Committee on Legislation, for them to report upon it. That was also the understanding when the first committee was appointed—that they should report to this State Board, and the report then be referred to the Committee on Legislation for report.

Mr. Bodine: I move you that this State Board hold their annual meetings hereafter for three days, instead of two, and the Executive Committee of the Board be instructed to so arrange in future.

My reason for making the motion is this—that the reporters from the different county boards, with their county reports, are entirely shut out by the present arrangement, so much so at least that we get no information from them. I think these papers are just as important to us, and just as interesting as anything else we can listen to, and the papers prepared should be produced in full and be discussed, in order that we may fully bring out the merits or demerits of the points introduced or suggested. There is also insufficient time to either listen to or discuss the able papers of those who have been asked to come before this State Board with their papers for our benefit and instruction.

In the report of the gentleman from Trenton, Mr. Lanning, in

his address on the care of roads, and the address of Mr. Burnett, on our dairy interests, both these subjects could have been discussed much more fully, as there were many points the individual members here would have been glad to have brought out, had sufficient time been offered to enable them to do so.

There is such a rush of business crowded into these two days that we don't have sufficient time to properly transact it; I therefore move that the Executive Committee be instructed to provide a three days' session for 1888.

Mr. Stiles: I would like to say that in Connecticut, where there is a most successful board of agriculture, it is the custom to have but one paper assigned to each session, one for the forenoon and one for the afternoon of each day of the session.

I would second the motion of Brother Bodine, and would suggest that instead of crowding the programme so full we give more time to each discussion, by having some one read one paper in each session, and then have that discussed fully and freely.

The Chair: Do you make that as an amendment or not?

Mr. Stiles: I would like to have it so, but we don't want to instruct the Executive Committee in their duties.

Mr. Bodine: Of course it will be understood by the Executive Committee that we don't wish to instruct them in their duties, and this will be discretionary with them. If they are short of funds, or, for some other reason, think it unwise to do this, they must use their judgment; we don't wish to appear as instructing them.

The Chair: If it is thought best then we will refer the whole matter to the Executive Committee for such action as they may deem to the best interests of this State Board, and of the farmers of New Jersey. As I hear no objections offered the matter is referred to the Executive Committee.

Mr. Garrison: I would like to offer a resolution here that I think might greatly simplify the trouble with the reading of these county reports.

"Resolved, That hereafter the time allowed for the reading of reports from the county boards shall not exceed ten (10) minutes, to any county represented."

Mr. Ege: I do not like that resolution in its present shape, as ten minutes is insufficient time to allot to the reading of a county

report. For some of them it would be sufficient, of course, but where the secretary of the county board is a live man, and spends so much time in making up an interesting report, ten minutes is a ridiculously small allotment for him to read it in. Even twice that is little enough, and I would amend to make it twenty minutes, instead of ten minutes.

Mr. Lippincott: We hold the meetings of this State Board for the purpose of imparting valuable information to its members, and to farmers, and we don't want to cripple the efforts of those who bring matters of interest here for our instruction. Some of these reports will need only three minutes (laughter) and some need half an hour, or even an hour, and we should give them the time they require for the proper rendering of their reports.

The Chair: The motion is to limit the time to ten minutes, and this has been amended to limit to twenty minutes, and this amendment has been again amended, limiting the time to fifteen minutes.

The amendment is agreed to.

The question being on the original motion as amended, that the reading of the county reports be limited to fifteen minutes is agreed to.

Mr. Dickinson: I move now that we refer it to the Executive Committee, with instructions to devise some satisfactory means of adjusting this matter.

The question being on the motion of Mr. Dickinson, to refer to the Executive Committee, it is agreed to.

Mr. Bodine: I understood from members present at this State Board yesterday, who attended the meetings of the Board a number of years ago, when it was in its infancy, that they could scarcely get a decent quorum, and that there were but very few who took any interest in its doings. It was said that scarcely a dozen people could be gotten together, and that it was all they could do to find business enough to occupy them for a single day.

To-day you have here with you secretaries of county boards who have spent time and labor in preparing valuable county reports, and you scarcely give them time enough in two days to read them. If this State Board keeps on growing in this way you will soon have to spend a week here, and you won't get through then.

Mr. Ege: It has been my privilege to attend this Board since it was first organized. I have attended all the meetings since the first, and I can look back to the time when we had scarcely any business to transact, except to hear the report of Dr. Cook, and to ask him a few questions, and have a little discussion, and make out our bills for our expenses (laughter) and go home. This constituted about all the business of the State Board of Agriculture at its annual meetings for the first few years after it was organized.

The principal business of this State Board is to foster and encourage the organization of county boards, local agricultural societies, farmers' clubs, granges, &c., all over the State. This is the object of the State Board, and this object is a very proper one. One of the most interesting features of these annual meetings is the reports made by the county boards, and we cannot afford to choke them off, when so much care has been expended by the different secretaries in preparing them. They say fifteen minutes is ample time for the delivery of these reports. Why, the very absurdity of such a statement appears on its face. There are very few of these secretaries that can make a creditable report that can be read in less than half an hour to an hour, and they should have as much time as they require.

We come here to listen to matters of interest to the members of this State Board of Agriculture, to the farmers of New Jersey, and to the farmers of other States. We can listen to matters that are talked about here before you; but we want to know about the condition of agriculture throughout the State. That is what the State Board of Agriculture is for.

We in the county boards meet four or five times a year, and we report to this State Board. The secretaries of our county boards are expected to report all that has been done in our meetings—and all in fifteen minutes. Of course I suppose there is no doubt that, should such a rule prevail, the State Board would be willing to grant indulgence to those having an interesting report to make, and give them more time.

Mr. Garrison: There are twenty-one counties in the State, and if we gather them all in you can see how much time it will take to hear their reports, if half an hour is allowed each one. If we attempt to do this what is the result? The entire time is

given to one or two counties, and nothing is heard from the others. These counties which get no chance to be heard from want justice, and nothing more.

Mr. Forsythe: This State Board of Agriculture has grown up from its infancy during the last fifteen years. Since I have been coming to these annual meetings I can remember great changes. Formerly the difficulty was to get enough business before us to occupy our time, and now when we have business it is proposed to choke off its being presented. At first we had reports from but very few counties, and now you are receiving from most of them reports full of interest and of great value to the people, not only of this, but other States. Are you going to cut these short now? Are you going to undo everything you have been doing in the past few years? Are you going to prevent the very thing you have been working so hard to secure—reports from your county boards? It is folly to think of such a thing. If two days are not enough time for the business of this State Board of Agriculture—for the business that comes before it to be transacted—let us take a week, and if one week is not enough let us take two weeks, but don't let us spoil all the work we have tried so hard to accomplish. It is our business to hear these reports, and let us hear them. Our business is here just as much as anywhere else, and we have the time to spare now, in the winter. Never in our history have we as farmers been so well organized in New Jersey, and now let us encourage the good work—let the good work go on. (Applause.)

Never before in the history of this State Board of Agriculture has there been so much intelligence and ability assembled as we have at this meeting of 1887, and now do we wish to discourage that which we have worked so hard to perfect? Never. (Applause). We have never had such a large attendance here before, and we hope to continue these successful meetings, this interest that is shown in all that pertains to the welfare of the farmers of New Jersey. Let us go on increasing the attendance of this State Board, by encouraging good reports and by encouraging the introduction of matters of interest.

The Chair: As the matter has been referred to the Executive Committee for their action I think we had better postpone any

further discussion on the subject now, and proceed with our order of business, with which we are behindhand,

The next business to come before us is a paper by Mr. Theodore F. Baker, of Cumberland, on "Preparing Vegetable Crops for Market."

[See Paper.]

Mr. Budd, of the Committee on Legislation: If there is no objection we would like to offer our report now.

The Chair: Under a suspension of the rules I suppose you can do so. If there is no objection we will hear from M. Budd.

Mr. Budd: The resolution in regard to the protection of dangerous railroad crossings we would report favorably.

We would also like to offer a resolution, and will hand same over to your Secretary to read.

The Chair: Will the Secretary please read the resolutions, and the board will take action on them?

WHEREAS, Your committee, to which all legislative matters have been referred, believe the aims and objects of the State Board will be better served by the appointment of a new Legislative Committee; therefore,

Resolved, That this State Board appoint the President and Secretary the Committee on Legislation for the ensuing year, and the present committee be discharged.

Mr. Budd: I move its adoption.

The Chair: I hope you will all be careful how you vote on that question, for we don't want any better committee than the one we have, and we want them to remain just as they are.

The question being on the adoption of the resolution of the Legislative Committee, it was lost.

The Secretary reads:

Resolved, That this meeting ask the Legislature to enact a law giving the Board of Freeholders in the several counties of this State authority to compel the railroad companies to place watchmen or gates, or both, at crossings which, in their opinion, may be deemed sufficiently dangerous to warrant the same.

Mr. Hutchinson: I move its adoption.

The question being on the motion to adopt it was agreed to.

Mr. Budd: The suggestions of Mr. Lanning in his address we also report favorably.

The Chair: If there is no objection we will accept the report of the Committee on Legislation, and the committee will be continued. So ordered.

The Chair: We will now hear from the Committee on Special State Premiums.

Mr. Baker: (Reads report as follows):

To the N. J. State Board of Agriculture.

As Chairman of your State Premium Committee, I have complied with your request and resolution passed at the last annual meeting as far as possible.

You will find my report confined to one division of the State premiums—Farm Products.

In the act approved March 30th, 1874, entitled "an act to promote the agricultural interests of the State of New Jersey," Section 3d, last clause, will be found, "and upon the conclusion of such awards, said judges shall make and submit a full and complete written report of all their doings to said State Premium Committee." Whether this clause of the act has been complied with or not I am unable to say, but no such a report has ever come to my notice, and finding such the case I wrote to Mr. Wm. M. Force, Secretary of this "State Society," who kindly forwarded to me the statements of crops as I shall present them to you. Though not as full and explicit as your committee had desired, it is the best we can command.

First premium crop of five acres of wheat, by John H. Denise, Monmouth county. Wheat sown on land where potatoes had been harvested. Time of sowing, September 28th.

The land received as a dressing, prior to planting potatoes, ten loads of stable manure and four hundred bushels Squankum marl per acre, plowed under, and eight hundred pounds commercial fertilizer after plowing; four hundred pounds per acre drilled in with wheat at sowing and one hundred and fifty pounds of nitrate of soda per acre applied to wheat about first of May. Harvested July fifth and sixth, and thrashed in August. Yielded per acre forty-five and twenty-seven sixtieths bushels. Sold for \$1 per bushel; quantity sown per acre one and a half bushels;

land, heavy clay loam. Will get seven hundred bushels from twenty acres, the Fultz variety surpassing all others in yield; next in yield, Finley.

Sworn and subscribed as required by law.

First Premium: Five acres of corn, by John H. Denise, Monmouth county. Land a timothy sod dress in fall, with five hundred bushels of Squankum marl, six hundred pounds per acre of commercial fertilizers, drilled in broadcast before planting. Corn planted four feet four inches in hills, with three stalks per hill; received level cultivation. Land, a clay loam; variety, large white gourd seed, in good cribbing order when husked, and yielded as weighed at time of husking eighty-nine and forty fifty-sixths bushels per acre.

Sworn and subscribed as required by law.

First Premium: Five acre crop clover hay, to John H. Denise, Monmouth county. Yield, three tons twelve hundred pounds per acre. Sold for \$11 per ton.

Sworn and subscribed according to law.

First Premium: Five acres timothy hay, To J. H. Denise, Monmouth county. A yield per acre of three tons and fifteen hundred pounds. Mowed twice the previous year, but not pastured. Hay sold in August at \$13 per ton. Land very heavily fertilized at time of seeding. This year an exceptional year for grass. This the second year's mowing. Cut this year from sixty acres about one hundred and eighty tons, showing the benefit of high manuring when season is suitable.

Sworn and subscribed by law.

First Premium: Five acres of oats, to Chas. S. Cooper, Morris county. Upon five acres of black soil I sowed eighteen bushels of white oats. I plowed the ground and harrowed in the oats without any manure, on which I raised two hundred and seventy-two bushels of oats and about five tons of straw. Sold the oats at thirty-five cents a bushel at the farm.

Sworn and subscribed as required by law.

First Premium: Crop of carrots, four acres, to H. D. Oliphant, of Essex county. On the twenty-second day of May, 1886, we sowed on flat surface nineteen rows three hundred feet in length with Planet Jr. seed drill, one pound of seed, using no barn yard manure and but two hundred and fifty pounds of Rand's fer-

tilizer. From this ground we harvested the first week in November one hundred and ninety-five bushels of carrots. During August and September the crops made very little growth by reason of continued dry weather, which prevented an average yield. Of the above crop I have sold one hundred and forty-two bushels for \$81.50, reserving balance for our own stock.

Sworn and subscribed as required by law.

First Premium: Crop of one acre Mangel Wurtzels, to H. D. Oliphant, of Essex county. On the 20th day of May, 1886, we sowed with Planet Jr. seed drill thirty-four rows, three hundred feet long, of long red Mangold Wurtzels beets, and twenty-two rows of Yellow Globe beet. The ground flat and rows about thirty inches apart. On this ground was spread in November, 1885, forty cart loads of barn yard manure and plowed in. The ground was re-plowed in the Spring and thoroughly harrowed with Acme harrow, working in broadcast one thousand pounds Rand's fertilizer. From this acre of ground we harvested the last week in October six hundred and thirty-four bushels of long red beets and two hundred and fifty-four bushels of Yellow Globe—in all eight hundred and eighty-eight bushels. The season was a particularly unfavorable one because of the severe and continued drought, having ten weeks in August, September and October with little or no rain. Of the above crop I have sold three hundred and twenty-eight bushels for \$134—the balance being used for our own use.

Sworn and subscribed as required by law.

First Premium: For one acre ensilage, to Joseph W. Corry, Union county. The crop was grown upon a sand and clay mixture, with a gravel subsoil, which had been in meadow eight years previous. The sod was plowed the last week in December, 1885, and on April 10th, 1886, I applied broadcast fifteen bushels of oyster shell lime. This was harrowed with a drag harrow. On May 15th, fifteen loads of barnyard manure was spread with a Kemp spreader and again harrowed. On the 20th of May, two hundred pounds of muriate of potash was applied broadcast and harrowed in. On June 9th, one bushel of Southern white corn was drilled with the Farmers' Friend grain drill, the rows being thirty-two inches apart. The cultivation consisted of passing a one horse cultivator through the rows at two different workings.

The acre was measured and corn cut, weighed and ensilaged on the 10th day of September, by Messrs. J. Phillips, H. Goodman and Henry Klsyb, and weight found to be twenty-one tons four hundred and twenty pounds.

Sworn and subscribed as required.

First Premium: Crop of one acre peaches, to H. D. Oliphant, Essex county. On the above acre stand one hundred trees of Late Crawford and forty-two trees of Old Mixon. These trees were set out in 1882, age two years from the bud. We had the first fruit (a few baskets only) in 1884, about one hundred baskets in 1885, and this year we gathered three hundred and twenty-three baskets.

The orchard is on ground reclaimed from a wild state about five years ago, has had only ordinary care and but little manure. We have sold from this acre of ground two hundred and thirty-seven baskets of Crawfords, and eighty-six baskets of Old Mixons, for an aggregate of three hundred and fifty-six and fifteen one hundredths dollars—nearly all to one dealer in Orange, N. J.

Sworn and subscribed as required by law.

First Premium: Crop of quarter acre of onions, to John Henry Vanness, of Morris county. In the fall of 1885 I had the ground plowed and let it lay in the furrow without harrowing until the spring of '86, then we applied patent manure at the rate of eighteen hundred lbs. to the acre. We then harrowed it in without plowing. After raking over we sowed one and one-quarter lbs. of onion seed and raised one hundred and eighty-seven bushels of onions. The soil is known as peat soil. I have raised onions on this same land for the last ten years with nearly the same success, some years more successful than others. I used barnyard manure for two or three years, then for a year or two patent manures. The onions were as good the last year as the first. For the one hundred and eighty-seven bushels I received seventy cents per bushel, amounting to one hundred and thirty dollars and ninety one hundredths dollars in the Newark market.

Sworn and subscribed as required by law.

Second Premium: Crop of onions, to Charles S. Cooper, of Morris county. Upon one-quarter acre of black soil I sowed one and one-half pounds of onion seed in drills fourteen inches apart,

upon which I put four tons of barnyard manure. I raised one hundred and twenty-nine bushels, which will average me on the market ninety cents per bushel, or \$116.10.

Sworn and subscribed as required by law.

This, gentlemen, is the best we could do in the way of a report.

Your committee would recommend that the committee to be appointed by this board at this meeting be requested to carefully consider such changes and alterations in the distribution of the amount appropriated by the State as they may deem proper and desirable and that they should embody such recommendation in a report to be submitted at the next annual meeting of this board.

Signed by the Committee,

THEO. F. BAKER,

P. T. QUINN.

The Chair : If there is no objection the report of the State Premium Committee will be received and filed. So ordered.

Mr. Ridgway : I have a resolution here I would like to submit, if there is no objection.

WHEREAS, The organization of the State Board of Agriculture has already become rather unwieldy for the time set apart for its business, and

WHEREAS, The different reports of State and county boards, and other reports from the different agricultural and horticultural societies occupy so much time in reading ; therefore be it

Resolved, That hereafter the reports of the different organizations, in order to facilitate business, be made to the Secretary of this State Board of Agriculture, on or before the first day of January previous to the meeting of the State Board, in order that the same may be printed and laid before the members of the Board on the day of the meeting.

The Chair : If there is no objection the resolution will be referred to the Executive Committee. So ordered.

Mr. Williams : I would like to ask for a little information from the chairman of the Committee on Special State Premiums.

On what grounds are these awards made, for these crops, as reported ? Are they based on the amount of the crop, or on the amount of money received for the crop ?

Mr. Baker (chairman of the Committee on Special State

Premiums): To the best of my knowledge it is offered by the State as a premium for the best crops.

Mr. Williams: On the size of the crop, or on the money value?

Mr. Baker: Both.

Mr. Williams: It seems to me this is a false method of awarding the money. If one man has better facilities than another for converting his crops into money he will secure the best value, without regard to the amount of crop raised. I think it should be based on the largest amount of product produced from the smallest amount of ground, and not on the amount of money the crop may bring when sold.

I might sell my crops of grapes for twenty-five cents a pound, and my neighbor, through having better facilities for selling, may sell his for ten cents a pound more than I, and draw this premium, even though my crop were heavier, for his small crop would bring more money than my large one, at a less price.

The Chair: The next in order on our programme is an address by Prof. J. C. Arthur, Botanist of New York Agricultural Experimental Station, Geneva, N. Y., "Botany Applied to Agriculture."

[See Paper.]

Mr. Ege: I move that the paper presented by Mr. Arthur be ordered printed, and that we extend to him a vote of thanks for his able and instructive paper.

The question being on the motion of Mr. Ege, it was so ordered.

The Chair: Are there any questions you wish to ask the gentleman who has just addressed you?

Mr. Pancoast: You refer in your paper to the advisability of soaking oats in a copper solution. Is this equally effective if the oats are allowed to dry three or four days or a week? Are they soaked and sown immediately after soaking?

Mr. Arthur: They are soaked and dried and then sown. I don't know what the result would be if allowed to stand three or four days. They are soaked in sulphate of copper. Sulphate of iron would also answer. So would potash, but sulphate of potash is considered the best. I have now forgotten the exact pro-

portions we used, but I know there was no injury even when the solution was very strong. There is but very little danger of injury to them.

I mentioned this because I noticed in the census report of 1880, in regard to cereals, the impression was given forth that oats did not suffer from rust—that they were not troubled with any disease which could be remedied. Still they do rust badly, and we know of no way to prevent them.

I think it is the general impression throughout the country, both West and East, that oats do not smut to any extent. I am sure this is a fallacy, for they certainly do. The reason this claim is made is that the smutty heads are overlooked. If you take the trouble to count, I am sure you will find in almost every lot of oats, in almost every season, and in almost every crop, a great number of smutted heads.

The Chair : Lieutenant Dunwoody, who was invited to be with us yesterday, has come from Washington to-day and will address you on the subject of "Our Signal Service."

[See Paper.]

Mr. F. DeCou : I move that the thanks of this Society be tendered to Lieutenant Dunwoody for his able and interesting address.

The question being on the motion of Mr. DeCou, it was agreed to, unanimously.

The Chair : I would now like to call on Dr. Cook to make some few remarks in this connection.

Dr. Cook : I have only a word to say. All this that has been brought before you was done at the instigation of General Hazen, for many years at the head of the National Weather Bureau at Washington. He has kindly sent from Washington, from the office there, a representative, only asking that this weather service be established in New Jersey.

I was so thoroughly impressed with the importance of it that I was quite willing to endorse it, but I had not the leisure to do much with it myself, though I heartily approved of the proposed organization of such a weather service in this State. I also promised to do anything I could to advance the idea with the farmers, and introduce it to their favorable notice. I am in no

wise connected with it myself, however. They have furnished a representative from the Signal Office in Washington who does all the work, and I only endorse the papers and sign them. I don't want you to think that this was accomplished through any work of mine, as it has all been done by this representative from General Hazen's office, at Washington. All that I have done was to endorse and recommend the movement that is now being made.

The scheme is certainly worth all that can be said of it. You know already of some of the work that has been done.

You all know what a great advance has been made in this direction during the last fifteen years, and if we could look forward fifteen years in the future there is no telling what may be done in that time.

The government in asking us to organize this service in New Jersey knows the full value of such weather predictions, and they have furnished a representative who is doing all the work. They certainly merit our co-operation, and we should do all we can to advance the movement so much in our interest. There is no other State in the United States so well adapted to the organization of such service as is this State of New Jersey. We have railroads running everywhere, and at all the stations on these roads, except the Erie—and we hope to have their co-operation also, in the near future—these weather bulletins are displayed, warning the people of threatened changes of weather, hours in advance of such change. These messages are sent to the telegraph offices all over the State, and any one willing to receive the information can obtain it free of cost. Clubs, societies, individuals may receive and make use of these reports as their interests demand. The whole thing is done with the greatest care, and I think they are as liberal with us as they can be. The railroads have also been very liberal with us in co-operating so heartily with this movement. Though the Erie Railway has not yet promised to co-operate with us, I think there is no doubt that it, too, will help us.

We have in New Jersey a mile of railroad for a little less than every four square miles of area. If these flags were displayed at stations along the lines of our roads you can understand what an aid it would be to us, for the farmers in almost every township,

of the State would be able to see these signals as displayed. You would in this way be able to get reliable information almost or quite twenty-four hours in advance of any change in the weather—information of the utmost value to you, enabling you in many cases to save valuable crops that might, otherwise, be destroyed for want of this knowledge, which would enable you to house the crop before the threatened change should arrive. Of course you can many of you get this information from your newspapers, but this notice very often does not reach you until late in the day, and the predictions given are those of the night before, but these would be later in the day and, hence, more useful to you.

The Government, in offering to do this for us, is offering us that which is a great advantage to the farmers of New Jersey—to the entire State—and I only hope it will be taken hold of earnestly and pushed to a successful issue.

The Signal Service has no money to do this for us, and we must lend a helping hand if we would make it a success. They have been willing to send one of their officers here to take charge of our station, and we can do no less than give them our earnest and hearty co-operation.

Many of you can buy sets of these flags and display them, and thus greatly aid others at a distance from the railroad station or telegraph office. Many of our people have already assured me of the interest they take in the matter, and they are heartily co-operating with us in our efforts to make the scheme a success. These flags cost but little—I think about \$2.00 per set—and you can do a great deal of good with them, if erected in sight of your neighbors not so advantageously located. I asked a gentleman recently if he would be willing to buy and display a set of these flags where they could be seen. He said "Yes, certainly." Another gentleman right here in front of me tells me that their Grange has taken charge of the matter, and will have some one detailed to take charge of their instruments. Let the people show liberality in this direction, and when once started there are a great many people who will be willing to do something, and we will be able to make the system a success. It can but be a great aid to agriculture, and I earnestly hope it will be taken hold of with a will and in good earnest.

It has been said here that this is the day of small things, as

we have heard at this meeting to-day, when speaking of the work going to make this State Board what it is to-day, and let us also take hold of this scheme with equal zeal, and it will soon be one of the great things.

I hope some measures will be taken by which this can be brought into full usefulness throughout the State—throughout all parts of it.

Mr. Budd: In this matter of the Committee on Legislation, I would move that the President and Secretary be added to that committee as it now stands.

There being no objection offered, it was so ordered.

The new law, as proposed by the Executive Committee, was read as follows:

An act to organize and establish a State Board of Agriculture.

1. Be it enacted by the Senate and General Assembly of the State of New Jersey:

That the members of all agricultural and horticultural societies, farmers' clubs, granges of the patrons of husbandry, and other agricultural associations shall constitute the membership of the state board of agriculture.

2. And be it enacted, That the board of directors shall hereafter consist of the following, viz:

Class A. Two members of the board of managers of the geological survey, to be appointed by said board;

Two members of the board of visitors of the state agricultural college, to be appointed by said board;

Class B. The professor of agriculture in the state agricultural college, the president and director of the state experiment station, and the master and secretary of the state grange, patrons of husbandry;

Class C. Two delegates from the state agricultural society; two delegates from the state horticultural society; two delegates from the cranberry growers' association, and two delegates from each county board of agriculture, which may associate itself with the state board, in the manner hereinafter provided.

3. And be it enacted, that the officers, board of directors and committees appointed by the state board (or by the board of directors) shall receive compensation from the State for their personal expenses when engaged in the duties of said board.

The secretary of the state board shall receive an annual salary of \$600, and may, with the approval of the executive committee, employ a clerk or clerks, at an expense of not more than one hundred dollars in any one year.

4. And be it enacted, That all members of the state board, as set forth in section 1 of this act, shall be entitled to vote on all questions at the meetings of the state board, also to hold office, and serve on committees, but to receive compensation for their services only as provided in section 3 of this act.

5. And be it enacted, That the state board of agriculture shall have full power to investigate such subjects, relating to the improvement of land and agriculture in its various branches in this state as they may think proper, and may take, hold in trust, and exercise control over donations or bequests made to them for promoting scientific education, or the general interests of agriculture.

They shall have power to elect to membership such state organizations as may from time to time apply, by the majority vote of the board, or of the annual meeting assembled, and such organization shall, upon election, be entitled to two delegates, the same as provided in section two of this act.

And be it enacted, That it shall be the duty of the state board of agriculture to encourage and aid, as far as practicable, the formation of county boards of agriculture in the several counties of this state, that all agricultural interests of the state may be fully represented.

7. And be it enacted, That the board shall meet at the state house, in the city of Trenton, at least once in each year (and as much oftener as may be deemed expedient) and shall elect a president, vice-president, secretary and treasurer, who, with three others, to be elected at the same time, shall constitute the executive committee of said board, and they shall annually appoint two members, who shall constitute a committee to examine the vouchers, and audit the accounts of the treasurer of said board.

8. And be it enacted, That the members of the board of directors shall hold office for the following terms :

Class A, one year,

Class B, one year,

Class C, two years,

the representatives of each association retiring alternate years.

9. And be it enacted, That the expenses of the officers, board of directors, and committees, as provided in section 3 of this act, shall be forwarded to the executive committee of the state board, who shall make up the same from time to time, together with the salary of the secretary, which account, when approved by the president of the board, and attested by the secretary, shall be presented to the comptroller of the state, who shall thereupon draw his warrant therefor upon the state treasury, who shall pay the same out of any moneys in the treasury not otherwise appropriated, to the treasurer of the state board of agriculture, upon such warrant.

10. And be it enacted, That in order to collect and disseminate reliable and useful information, and to encourage a higher standard in the agriculture and horticulture of the state, the executive committee are hereby authorized to cause to be made experimental and practical tests of specific remedies or cures of diseases of domestic animals and poultry, employ suitable persons to lecture before the state board of agriculture, at its annual or other meetings, to examine the reports of the state horticultural society, and all other reports, essays, papers, and documents, and to accept or reject the same, or any portion thereof; to apportion to the state horticultural society, and the several county boards, such sum or sums of money, for the information secured and the labor performed, as they deem equitable, such amount not to exceed one hundred dollars in any one year to any county board, one-half of the amount to go to the party or parties making up the report, and one-half to the treasury of the county board to defray its running expenses, and submit the amounts thus determined to the state comptroller, who shall thereupon draw his warrant upon the state treasurer, who shall pay the same out of any moneys in the state treasury, not otherwise appropriated, to the treasurer of the state board of agriculture; *provided*, that the amount thus expended shall not exceed the sum of two thousand dollars in any one year.

11. And be it enacted, That the treasurer of the state board shall annually submit an itemized statement of his receipts and expenditures, together with the vouchers for the same, to the auditing committee of the state board, who shall make a report of their examination to the state board of agriculture at each annual meeting, which statement shall be published in its annual report.

12. And be it enacted, That the membership of the county boards shall consist of all the members of the agricultural and horticultural associations of each county, and such others as they may elect :

I. In counties having no agricultural or horticultural organizations, any number of citizens, not less than ten, may organize a county board of agriculture by electing a president, a secretary, a treasurer, and a board of not less than five directors, adopting the name of The county board of agriculture (inserting in each case the name of the proper county), and filing with the secretary of the state board of agriculture a certificate of such organization ; *provided, however,* that upon the formation of any agricultural or horticultural association in said county, they shall become members of such county board, as provided in articles II and III of this section.

II. In counties having but one agricultural or horticultural organization (whether known and designated as a "society," "club," or "grange"), such organization may become the county board of agriculture for such county by electing the officers and directors prescribed in the first paragraph of this section, adopting the name of "The county board of agriculture," (inserting the name of the proper county,) and filing with the secretary of the state board a certificate of such organization.

III. In counties having more than one agricultural or horticultural organization (whether known and designated as "societies," "clubs," or "granges"), such organizations or so many of them (not less than two) as may elect so to do, may organize a county board of agriculture, by electing a president, a secretary, a treasurer and a board of directors, to consist of one member of each agricultural or horticultural organization of said county (that may elect to become members of such county board), adopting the name of "The county board of agriculture," (inserting in each case the name of the proper county,) and filing with the secretary of the state board of agriculture a certificate of such organization.

IV. The president, secretary and treasurer of each county board of agriculture shall be ex-officio members of the board of directors of such board.

V. Every certificate filed, as hereinbefore provided, shall truly and correctly state—first, the name of the county board filing the same; second, the date of its organization under this act; third, the names of its officers and directors; fourth, the number of bona fide members in each organization represented in the county board at the date of organizing said board, and the names of such organizations.

VI. In any county in which there may be at the same time a county board of agriculture, and any other agricultural organization, such board shall have the prior right to representation in the state board, unless, for good cause shown, the said state board, or its executive committee, shall otherwise order.

13. And be it enacted, That it shall be the duty of each county board of agriculture, on or before the 15th day of December in each year, to make a full report of the transactions of such board during the year next preceding, with as complete a statement as practicable of the condition, progress and results of agricultural and horticultural industries in such counties respectively, together with reports on such special subjects of inquiry as may from time to time present themselves to such county boards, or be submitted by the state board of agriculture, or the executive committee thereof, and forward the same to the secretary of the state board of agriculture; and it shall be the duty of the several representatives of county boards in the said state board to make a full report to their respective county boards of the proceedings of such meetings of the state board as they may from time to time attend.

14. And be it enacted, That the directors of the state board of agriculture, or its executive committee, shall have power to make all necessary and proper by-laws for carrying into execution the provisions of this act, and to adopt suitable rules and regulations, not inconsistent herewith, for the government of the state and county boards of agriculture.

15. And be it enacted, That annually, on or before the fourth Tuesday in February, the executive committee, through its chairman or secretary, shall submit to the legislature a detailed report of the doings of the state board of agriculture, together with such recommendations and suggestions as the interests in their charge may require.

16. And be it enacted, That the act entitled "An act to organize and establish a state board of agriculture," approved April twenty-second, one thousand eight hundred and eighty-four, and the supplement thereto, approved March tenth, one thousand eight hundred and eighty-five, be and are hereby repealed.

17. And be it enacted, that this act shall be deemed to be a public act, and take effect immediately.

Mr. Ridgway: I would move to amend Sec. 2, Class C, and insert after the word "association" the words "two delegates from each Pomona Grange."

The question being on motion to amend paragraph under class "C" was agreed to.

Mr. Bacon: I now move its adoption as a whole.

The question being on the motion of Mr. Bacon to adopt as a whole, it was agreed to.

Mr. DeCou: I wish to offer a resolution in regard to the appointment of a committee. It is:

Resolved, That a committee of three be appointed by the Chair, whose duty it shall be to correspond with other State Boards of Agriculture, and take such other steps as they deem necessary for the purpose of forming a United States Board of Agriculture, and report to this State Board at its next annual meeting.

I move its adoption.

The Chair: If there is no objection the resolution will be received. So ordered.

The next business before the Board is a paper by Dr. A. T. Neale, Chemist, New Jersey Experiment Station, New Brunswick, on "Our Experiment Station—its past, present and prospective work."

I take pleasure in introducing Dr. Neale to this State Board.

[See Paper.]

Mr. Voorhees: I move that a vote of thanks be tendered Dr. Neale for his able and interesting address, and that his paper be received and included in our annual report.

The Chair: I have the pleasure of tendering you the vote of thanks of this State Board.

If there is no objection the paper will be received and filed. So ordered.

The Chair: I notice here in front of me several fine exhibits of products brought here by the members of the State Board. I overlooked the appointment of a committee to report on these, but will remedy this oversight now. I would name as gentlemen to act on that committee:

Mr. D. D. Denise, Mr. Voorhees and Mr. Giffin.

Our next topic is that of "The English Sparrow," by William B. Ward, of Newark, our Vice President. I take great pleasure in calling for his address.

Mr. Ward: Mr. Chairman, and gentlemen of the State Board:—You all know that the subject assigned me is one of a very small magnitude, but also one that is very noisy in its character. The one redeeming feature of my paper will be its shortness. I anticipated from the programme that the time I would get would be very brief, and I also realized that at that time you would hardly care to listen to a lengthy paper in regard to the sparrow, and I have, therefore, made it quite short.

[See Paper.]

Mr. Blish: I would like to say a few words in regard to this subject of the sparrow.

When I was a very small boy my father gave me a puzzle; it was this—when they come they won't come, and if they don't come they will come. I could not tell what he meant, and he said it was a sparrow. If the sparrows come the peas won't come—that is what he meant.

I remember when we had perhaps one hundred times as many sparrows as now, and they were a great plague to us at home. They got to be such a nuisance that there was a law passed to have them killed—it was not a bounty, it was a tax. Every farmer, according to the number of acres he had, had to bring so many heads of sparrows and deliver them. In this way they soon succeeded in destroying nearly all of them, and what was the consequence—the same as here to-day. Every tree was eaten up with worms, and then they repealed the sparrow law. What is the consequence to-day? You say it is the sparrow who eats all the fruit and vegetables, but that can't be so, for in Germany they were all eaten up when the sparrows were all killed, and then they repealed the law. It cannot be the sparrow who eats all the fruit. It is not so.

When the sparrow question came up here last year I thought I would keep my eyes open, and try to find out what damage the sparrows were doing, and I could see what there was in him. I wanted to see what he ate. I saw several of them in the fields and I killed some of them and they all had worms in their crops. Later on—in July—when I was mowing, I had a good chance to watch them, and see what they were doing. All around me I would see them with a worm or a caterpillar in their mouths. Within gunshot of me there was a cherry tree just loaded full of ripe cherries, and they did not go after them, but they were catching worms.

They say he drives away other birds, and takes their nests, but if he does there are enough left for the other birds to build in. I have a great many swallows around my barn, and when they would make their nests the sparrows would come along and take them, but it did not take the swallows long to build another, and I have just as many swallows as before. I don't miss any of them, and I don't think the sparrow drives them away. So it is with the blue birds when they build a nest—the sparrow takes his nest but in a short time the blue bird builds another nest, and is all right.

It is only a year ago that one of my neighbors drove away a couple of gunners, and they had forty-five swallows in their bags, shot to get the wings for the ladies' bonnets. It is man who drives away the swallow more than the sparrow does.

Of course the sparrow has some bad points, and that we all know, but I think he has some good points, too. Even the worst enemy of man has some good points. So it is that in the spring every man and every boy thinks he must shoot the crows, and this is not necessary, for if the farmer will only tar his corn he will have no trouble with them.

Mr. Denise: I move that a vote of thanks be tendered Mr. Ward for his interesting article on the sparrow.

The question being on the motion of Mr. Denise, it was agreed to.

Mr. Williams: We would like to report on the resolution in regard to the English sparrow.

Your committee to whom the resolution on the English sparrow was referred, report—

That they consider National and State Legislation both necessary and desirable for their extermination, and do recommend the same to the Committee on Legislation for their action.

The Chair: If there is no objection the report of the committee will be received and referred to the Committee on Legislation. So ordered.

I have a few more committees to announce:

On National Board of Agriculture, Isaac DeCou, David Roe and J. B. Rogers.

On Special State Premiums, H. I. Budd, T. F. Baker and Hon. John A. McBride.

On the Bragden Cure for Hog Cholera, Franklin Dye, Dr. A. T. Neale, Dr. W. K. Newton, D. D. Denise, and Morris Bacon.

Is the Committee on Credentials ready to report?

Mr. Williams: I have here the bills of all the delegates except three.

The Chair: The report will be approved if there is no objection. So ordered.

The Chair: Is the Committee on Reports of Officers ready to report?

The Secretary read the report as follows:

Your Committee have examined the report of your Executive Committee and feel that the unanimous thanks of the Board are due to them for the effort therein expressed of the good work of said committee during the last year, and would mention, as part of their good work, the passage of the Oleomargarine Bill, which became a law in March, 1886.

We hope they will push the bill on weights and measures, now in Prof. Cook's hands.

We heartily endorse the drafting of a law to equalize the now existing conflict in our present law.

We would also ask if the said committee have appropriated the full amount authorized by law to the different boards; and if not why not?

We further hope the consideration of separate rooms for collections of grain and cereals will be accomplished.

We also heartily endorse the talent procured by said committee to address this annual meeting of the State Board.

All of which we respectfully submit :

VANBUREN GIFFIN,
W. S. COMBS,
J. M. WHITE,
Committee.

The Chair : If there is no objection the report will be received and the Committee discharged.

The following resolution from Hunterdon county was offered :

Resolved, That henceforth all young growing timber should, as far as possible, be protected.

Mr. Budd : I move its adoption. So ordered.

The Chair : We will call for the report of the committee on the exhibition of products on our tables.

Mr. Denise : We have not had much time to make up a report, but we would report as follows :

[See Report].

We have here a very fine sample of marl, but we don't know who brought it.

Mr. George Rogers : I brought that sample of marl here. I have been here to-day and have been surprised that while we have that here which is as good as the best fertilizers we hear not a word about it. The State is full of it and it is very valuable, both now and in the future. I refer simply to this plain green marl.

I brought that sample here with the hope that the farmers might want to take the matter up and discuss it.

Mr. Budd : I move that the report of the Committee on Exhibits be received and the committee discharged. So ordered.

Mr. Giffin : This has been handed to me to be read before this Board. It is a resolution in regard to marl :

Resolved, That there be some action taken by this State Board of Agriculture to awaken the interest of farmers in the use of the inexhaustible supply of marl which underlies a strip of this State from Salem to Sandy Hook, a source of fertility that has given to the farmers of this State more tons of clover, stalks and

straw, more bushels of wheat, rye, corn and potatoes, than all other fertilizers put together that have been imported into this State. There is no tariff on it except the labor of cartage or freight.

In the present depression of prices of farm products, with no protection or bonus for farm produce, as the Hon. W. H. Hatch has told us, it behooves us to form a protection for ourselves, by confining the supply of the elements of fertility to our own State, and as near as possible to our own acres and barn yards.

Resolved, That the farmers of this State need to be more interested and enlightened concerning the management of farm manure, which is now being wasted in ninety-nine out of every hundred farm yards, and that a part of the money expended in analyzing fertilizers, and keeping them prominently before the farmers, be used in teaching us how to make more and save better that which we have in our soil and farm yards, than in what, where, and when to buy fertilizers.

• Mr. Budd: I move the resolution be adopted and referred to the Executive Committee. So ordered.

Mr. DeCou: I move that a vote of thanks be tendered our officers. Agreed to unanimously.

The Chair: I wish to express my thanks for the large attendance, close attention, and courtesy that has been shown your officers during the sessions of this State Board. I trust that our meetings here will result in great good to us all, and trust we will all meet again in these halls next year, if we are spared, though I fear that some of us may never meet again. That good will result from such meetings there is no doubt, even if it be no more than the advantage of becoming acquainted with each other. If we have done this it is some satisfaction to us to think we have accomplished some good.

I thank you for your courtesy, on behalf of my fellow officers, and think you have made no mistake in selecting the Executive Committee who served you so faithfully last year. I know they have worked hard, and I know they are willing and ready to work just as hard this year for the good of the farmers of New Jersey.

I trust when 1888 rolls round it may find us all assembled here together again, though it is probable some of us will not be.

I trust we will at least have as fair and intelligent an audience as we have had here this year, and be able to take a still greater stride forward in advancing the interests of agriculture in the State of New Jersey. (Applause.)

I hope to meet you all in the Assembly Chamber to-night.

Mr. Lippincott: I move that we adjourn, to meet in the Assembly Chamber at 8 o'clock. (So ordered.)

GENTLEMEN:—I wish to congratulate you on the extent to which you have become known.

Last night we had crossed the Mississippi and brought one of her ablest statesmen to address you, and to-night we have again gone the West and brought one of Ohio's ablest men.

I have the honor of introducing His Excellency, Governor Robert S. Green, who is with us and who has kindly consented to preside over your meeting to-night.

Governor Green: Mr. President and Gentlemen of the State Board of Agriculture:—You all know the old saying that there are two sides to every question. I understand you have all had the pleasure of listening to Mr. Dudley and Mr. Phelps, with reference to the question of the tariff, and its effects on the interests of the farmer, and now it is a pleasure to me to introduce to you to-night one of the most able and eloquent champions of the other side of this question.

I take pleasure in introducing to you the Hon. Frank H. Hurd, who will address you on the subject of "A Tariff for Revenue Only, and its Effect on the Interests of the Farmer." (Applause.)

[See Address.]

Hon. Edward Burrough: Mr. Chairman, I desire, sir, before we separate, to move you that a vote of thanks be extended to the gentleman from Ohio, who has so ably and eloquently entertained us this evening. In doing so, I am actuated by a high sense of the importance of the subject upon which he has discoursed, and for the information which he has given to the business men of New Jersey. I hope that this vote will be unanimous.

Governor Green: You have heard the motion that a vote of thanks be tendered to Mr. Hurd for his able and eloquent address

which you have heard this evening. All in favor of it will signify by saying "aye." (Motion carried.)

Governor Green: Gentlemen, I will be glad to see you in the Executive Chamber, and introduce you personally to Mr. Hurd immediately on leaving the Assembly Chamber.

On motion the Board adjourned *sine die*.

PRESIDENT'S ANNUAL ADDRESS,
DELIVERED BEFORE THE
State Board of Agriculture,
IN THE SUPREME COURT ROOM, TRENTON,
ON Wednesday, January 26th, 1887, BY
HON. EDWARD BURROUGH.

PRESIDENT'S ANNUAL ADDRESS.

Gentlemen of the New Jersey State Board of Agriculture :

Nearly fifteen years have elapsed since the Legislature of the State of New Jersey authorized the formation of a "State Board of Agriculture."

The men who conceived and established the board were, no doubt, deeply impressed with the necessity of an organization recognized by the State as a channel through which such information could be imparted to the farmers of the State as is necessary to the advancement of their industry.

The direct object of the Board was set out in the preamble of the act, as follows :

WHEREAS, The National Agricultural Convention, at its late meeting in Washington, in taking action for the promotion of agricultural interests, resolved that the several States in which boards of agriculture do not now exist be requested to organize such boards by legislative action ;

AND WHEREAS, Such a board in the proper exercise of its functions could become the centre about which to collect the results of successful farming, and from which to send out digested information in regard to the great question of farm economy, tillage, crops, stock, fertilizers, reclamation of lands, training of farmers, &c., &c.

This act was approved April 4th, 1872. The originators of the law at once proceeded to effect a permanent organization, under the provisions of the act, and the State Board of Agriculture of New Jersey was soon an established institution, and the benefits thus far derived from it are, in a great measure, due to these men, whose forethought has given you an organization destined to be of great importance to the agricultural and horticultural interests of the State.

The formation of the State Board soon led to other ideas for the promotion of farming industries, and in 1874 another act was approved, under the following preamble :

WHEREAS, The agricultural and horticultural interests of this State need and deserve more public recognition and support, and hence are entitled to such material aid as will tend to stimulate and encourage the same ;

AND WHEREAS, In consideration of the importance of such aid, it is expedient to legislate by judicious care to foster this branch of our domestic economy, by a system of proffered rewards, that will incite a true spirit of generous and profitable rivalry among the tillers and producers of the soil.

This act appropriated a sum not exceeding three thousand dollars annually, for State premiums, to be offered by the State Agricultural Society, the Committee on Awards consisting of three members of this Board, three members of the State Agricultural Society, and His Excellency, the Governor of the State.

As the work of the Board expanded the original law was found inadequate to meet the requirements of the organization, and another law was passed in 1882. This, also, was found inadequate, and in 1884 the present law was passed, whereby an appropriation of one thousand dollars was allowed annually for the formation and support of county boards, and other legitimate objects of the State Board. This last law repealed the laws of 1872 and 1882.

In 1885 a supplement was passed increasing the membership of the State Board. This supplement, in several instances, conflicts with the law of 1884, as none of the inconsistent provisions have been repealed. In view of this inconsistency, and with a view to making other desired amendments to the present law, your Executive Committee have drafted a new law, embodying all the essential features of the present law, and making such additions as, in their judgment, are necessary for the prosperity of the Board. I would recommend these to your careful consideration.

The State Premium Law still remains in force, but whether the money thus expended accomplishes the purpose desired, or whether it could be used more beneficially in some other manner, you will probably be better able to judge when the State Premium Committee makes its report.

From this brief review of the laws affecting the organization of the State Board of Agriculture, you will see that there has always been a desire on the part of our legislators to encourage and foster the agricultural interests of the State, and to give the farmers of New Jersey any reasonable and legitimate assistance necessary to advance their interests.

This liberality on the part of previous legislatures leads us to indulge the hope that similar favors may be extended us by the present and succeeding ones, and it therefore devolves upon you to give all matters pertaining to legislation that come before the Board a careful supervision, in order that we may maintain the respect and confidence now reposed in this organization by our State Legislatures.

No undue extravagance should be permitted by the Board in its operations, yet all legitimate undertakings should receive full encouragement. You should also be careful not to lend your influence to the schemes of designing persons, who would sacrifice the usefulness of the State Board to further their individual ends and ambitions.

The work of the Board for the past year has been presented to you in the report of the Executive Committee, and the several matters therein mentioned are deserving of your most careful consideration.

The labor of the Board is annually increasing, and will continue to do so as the field of its usefulness is extended ; it therefore necessitates a more expeditious method of transacting the business brought before us at our meetings, and a more careful guidance and supervision, to promote and maintain the benefits of the organization.

The work done by the Board should be on the basis of freedom and justice, and its aim should be to promote the general prosperity of our agricultural interests, in their varied branches, benefitting all alike, so far as it is possible to do so. This work would be greatly facilitated by the location of permanent quarters in the State Capitol, where the records, specimens and exchanges could be conveniently arranged and preserved, and where the business meetings of the Board could be held.

I am pleased to be able to report, in this connection, that an application has been made to the committee in charge of the re-

building of our State Capitol, asking them to assign to the Board of Agriculture the rooms desired for the purposes named, and that favorable responses have been received ; nothing definite has been arranged for as yet, however, and some expression of your views on this subject should be given to the proper authorities.

The subjects presented by the county boards, asking your endorsement for legislative action, are strictly in order by way of presentment, but should be carefully considered before being sent out as having received the endorsement of the State Board. We cannot all be legislators, nor is it desirable that we should be, and the consideration of these questions in the county boards, and again by the State Board, will, therefore, give ample opportunity for you to pass upon their merits and demerits, before presenting them for consideration by our legally constituted law makers.

After securing the legislation you desire your work is not finished ; you should see that the laws are enforced, and their efficiency tested ; otherwise the State should not be put to the expense of such legislation.

The action of farmers in demanding of Congress the passage of the Oleomargarine Law was the first instance, to my knowledge, where the agriculturists of the country stood up and demanded their rights, and remained standing—so to speak—until their numbers were counted. The result of this determined effort on their part you are all familiar with. And yet the victory is not assured. Our opponents in this matter are active and vigilant and bold, and being well supplied with funds they will maintain watchful agents wherever legislation detrimental to their interests has been secured, and embrace every opportunity presented, whereby they may secure the change, repeal, or modification of existing laws to suit their purposes.

There are a few amendments to the National Oleomargarine Law that should be secured, to make it more effective, and I hope you will be made fully conversant with these by the gentleman who will address you this evening. As usual in such cases the farmers are made to bear the burden of censure by the opposition, notwithstanding the fact that we have received valuable aid from dealers and consumers, and it is from the latter we expect our greatest support. The consumers must stand by the

dairymen if they want a good, pure article of butter, and that at a reasonable price. The cry of "high prices" and a poor article will soon be stopped when the dairymen are once again given a sure market and a reasonable price for their butter. Farmers who, a few years ago, were known as butter makers are now known as milk-men, and the milk market is no longer profitable. I may be asked for a remedy, and would reply that as soon as a market for butter is assured, creameries will again become profitable, the cream gathering system of the West will come into practice here, and pure creamery butter will take the place of oleomargarine, being also subject to inspection by the State Dairy Commissioner.

The action on the part of the farmers before Congress developed their strength to such an extent that it attracted the attention of the politicians, and resulted in each of the three great political parties inserting a plank in its platform recognizing the depressed condition of agriculture, and demanding such legislation as would tend to restore its prosperity and advance its interests, thus committing their representatives to measures tending to foster our industry.

Farming in New Jersey is, of necessity, greatly diversified, and every known branch is thoroughly and intellectually practiced—stock breeding, grain farming, dairy farming, truck farming and market gardening, tobacco growing, fruit and plant growing, the raising of cranburries, orcharding, the nursery, the vineyard, the apiary, the florist, the cane grower and sugar maker—all are largely represented in what we term the agriculture of the State. And in all the several branches mentioned, the competition is of the strongest character. We meet in our markets competitors from the Northern, Southern, Eastern and Western sections of our own country, and from Canada, Prince Edward's Island, Nova Scotia, and Europe. Necessity has, therefore, compelled the farmers of New Jersey to take an advanced position in the agriculture of the country, requiring constant and steady care, calculation, enterprise, and perseverance, to maintain their position amid such wholesale competition as they are compelled to encounter.

THOUGHT.

In no industry is the exercise of the mental capacities so largely called upon as in the diversified field of husbandry; in fact the farm is a mental workshop, as well as a field of manual toil. Activity of the brain is as necessary as a skillful hand, and the farmer of to-day who does the most thinking is the one who is the best farmer, for he who constantly toils with his hands, without giving the subject thoughtful consideration, is not a true farmer; he is a drudge, and his wife and children soon learn to look upon the life on a farm as an endless round of toil, and sigh for other employment.

It is one of the great blessings of an advanced civilization that mind is made to guide, direct and relieve the burdens of physical toil, and nowhere is there a better illustration of the benefits which mind can confer to relieve the labor of the hand than in agriculture. It is only necessary to refer to the improvement and perfection of agricultural machinery of the present age to be convinced of the truthfulness of this assertion.

Mr. F. P. Root, of Monroe county, New York, in a communication to the *Country Gentleman*, so fully sets forth my ideas upon this subject that I shall venture to present it to you. He says:

"In the days when all labor was done by physical force, the battle was to the strong, as well as riches to men of understanding, but in our day the battle on the farm is to men of thought, rather than to men of strength. The time can well be remembered by many of the present generation when the man of the strongest muscle, who could handle the scythe, the sickle or cradle and the hoe with the greatest force, and with diligence, was called the best farmer, and was generally the most successful in accumulating money; but times have changed, and mind has gained a victory over strength. Successful farming can only be awarded those who, by the exercise of thought, make every resource available to their interest. There is no such thing as success, at the present time, in hap-hazard farming; there must be order and system, care and thoughtfulness, in every department of farm management, or no profit will be realized.

At the present time of general depression in every branch of

business, we can only expect a small margin of profit, and for that profit we must take advantage of every means, and economize in every way. If the steer raised on a farm, of common stock, will be worth at three years old \$50, a cross of improved stock with a little better care, of like age, would be worth \$60. The dairyman who makes his common herd pay him but \$30 a season, will, by a little care in the selection of cows from the best milking stock, and with better attention, bring them up to \$50. In feeding for pork, when fed in a careless and thoughtless way, a bushel of corn will make but six or seven pounds; but when fed with care, the corn made into meal, and scalded or properly soaked, a bushel will make ten or twelve pounds, or a gain of one-third by economy in feeding. In the making of dairy products, the range of values are as one to three, or, in other words, the best butter sells quicker, is in better demand, at thirty cents than the poorest at ten cents, or the ordinary at twenty cents.

The grain grower who cultivates his land in an ordinary way, has no regard to rotation of crops, and with but little care for soil fertilization will expend from \$10 to \$12 per acre for a crop of wheat that may yield from sixteen to twenty bushels, and at present prices would bring but \$3 or \$4 for the use of land with the loss of fertility. The thoughtful farmer has learned that, to expend \$3 or \$5 per acre more in fitting and fertilizing, the land will safely return thirty bushels per acre, and a profit of \$8 or \$10, and the like rule will apply to all other grain crops.

The only profit is in always raising the best of all products, and in saving expense by the use of labor-saving machinery when possible."

That there is much truth in these remarks none of you will attempt to deny, and I will not trespass upon your time by discussing them, but will content myself by commenting upon some other suggestions of Mr. Root, under their proper heading, one of which is in regard to the

EMPLOYMENT OF LABOR.

Probably no subject at present is causing the farmer more anxiety than that of labor upon the farm, both in the kitchen and in the field. The question is one largely controlled by circumstances in the locality or neighborhood of the farm.

Many methods have been resorted to, with varying success, but the one most likely to succeed is that of providing comfortable houses where the laborer and his family can reside, and where several farmers in the same neighborhood employ this kind of help, associations are soon formed among the employes, which are just as essential to their happiness as similar associations are to the happiness of their employers. The element of social intercourse runs through all classes of humanity alike. I can see no reason why the farm laborer should be deprived of his share of social enjoyment more than his employer should be deprived of such privileges. The result of such a system is a steadier and better class of laborers—far better than in sections where only single men are employed, and they board with their employers. This latter method must soon give place to the former, for, aside from the advantage of steadier help, the laborer should board himself, and for this reason the cottages should not be far from the farm buildings, in order that little time be lost in coming from or going for meals. Again, this method is especially commendable, as it relieves the farmer's wife of the care and labor of cooking and providing for the farm hands, against which she has a just right to protest. There is no reason why she should be compelled, in addition to the numerous other duties devolving upon her, to board the employes upon the farm, any more than that the wife of the merchant should be compelled to board his salesmen and clerks, or the wife of the manufacturer to board his mill hands, and I venture the prediction that, before another generation shall have passed away, it will be just as exceptional to find a farmer in New Jersey boarding his farm hands as it is exceptional to-day to find one that does the washing and mending for his employes. It is within the memory of many—yes, of the majority of those who are present to-day, when the washing and mending were done away with, to relieve the housewife, and the boarding of farm laborers must be done away with for the same reason. Though it be said to our shame, it must be admitted that the only slaves to be found in the United States to-day are those to be found in the farmer's kitchen; and any practice that sustains such a system must, of necessity, and of right, fail.

Low priced labor is not always the cheapest; the wages paid upon the farm constitute the greatest outlay, and, consequently,

such money should be judiciously expended. In this connection the remarks of Mr. Root are again pertinent. He says:

"In the employment of labor on the farm, a strict regard to economy must be observed, so that every day's work will bring its proper return. Plans for necessary work will be made in advance, and nothing allowed to suffer for want of time and attention. Tools will be put in order, and the best procured, so that the most efficient work can be done with the labor employed, and no time lost for want of profitable employment. When repairs of tools are needed, they should not be left till wanted, but be repaired in advance, that no delay be had in waiting for them."

I have always found it to be of great advantage to give all farm tools a thorough inspection about the first of January, and to have those needing repairs or new castings put in proper order before they are needed. By so doing I was always able to know just what new tools I should need, and to know whether additional barrels, baskets, boxes or crates, for the marketing of fruits or produce, are needed, and, if needed, to procure them and have them properly marked before the rush of work came on.

SEEDS.

Another matter of great importance, worthy of your careful consideration, is that of the selection of seeds, and the responsibility of the seedsman as to the reliability of his seeds, for vitality and purity of stock.

I am not disposed to condemn all seedsmen alike for the impositions only too prevalent in their business. At this day it is getting to be a very common and a favorite plan for the publishers of advertising sheets to offer packages of seeds as premiums for subscribers, and the sooner farmers realize that the true object of these seed offers is not to benefit the farmer by distributing a really meritorious article, but solely to benefit the publishers of the paper, by securing for them a larger circulation for their publication, in order that they may obtain the higher advertising rates an increased circulation would entitle them to demand—the sooner the farmers realize these indisputable facts the better it will be for them in every respect. It is scarcely necessary to add that very frequently the seeds offered by these publishers are the old cast-off stock of seeds-

men, who sell them very cheaply, in order to make room for better and fresher stock. Justice demands that I shall make one exception in this matter—in favor of the *Rural New Yorker*, whose free seed distribution is the outcome of its experimental tests on lands in New Jersey and other States. The best way to avoid these impositions is not to subscribe for such publications, and to ascertain in advance what seeds you desire to purchase, and then thoroughly test their vitality.

If this matter of testing seeds were more generally followed there would be less loss from the failure of seed to germinate, which failure is seldom discovered until it is too late in the season to replant them. The risk to the agriculturist is too great, and the time and operation of testing too easy and inexpensive, to be longer neglected by practical men.

By way of illustration I will mention a test made at the Ohio Experiment Station. In the case of radish seed tested, only twenty-four per cent., on an average, sprouted, when selected from "commission" seeds, while of those received from seedsmen direct sixty-five per cent sprouted.

There may be seedsmen who will sell just as good seeds on commission, through the medium of country store keepers, as those they sell direct to the planter, but as a rule the nearer the consumer can come to the producer the less risk there is of fraud, and the easier it is to place the responsibility where it belongs, should fraud be discovered.

MARKETS.

The marketing of farm products is a matter of great importance to the agriculturists of the State, and deserves more than a passing notice.

Having alluded to the strong competition we are subjected to in our markets, I will now suggest that you retaliate, by sending the products of New Jersey into the Southern seaboard cities, and interior towns of the country, and, in order to do this successfully, you need organization and co-operation, and in these matters your county boards can be of great advantage to you. Railroads now penetrate every county of the State, and they should be made the avenues (as far as possible) through which to reach the markets of the country.

I have noticed an effort through the southern counties of the State to form club at depots, the members of which are advised twice daily by telegraph of the condition of the markets in New York and Philadelphia. They know exactly the freight on each box or crate to each of these great cities, and their shipments are made accordingly. You may ask if this is not an expensive proceeding, and I answer, not necessarily so. By the use of cypher telegrams a great deal can be said with a few words, and you have only to get a few blanks printed for the operator at the station, who, for a small compensation, will decipher the despatches and fill in a blank for each member of the club, who, when he unloads his products, gets his despatch and decides where and to whom to consign that shipment.

The idea that I am attempting to convey will be more clearly understood by the following circular that I secured from one of these associations :

FRUIT GROWERS' ASSOCIATION,

JUNE 29th, 1886.

RASPBERRIES.

PHILADELPHIA.	BLACK.	RED.	
H. McCully & Co.....			
Hutchinson & Hill.....			
Meyers & Smith.....	6		
Kerns & Wescoat.....			
Buzby & Shinn.....	6q	5p	
H. Wischman & Co.....			
Barker & Co.....			
William H. Michael.....			
S. S. Dormon.....			
NEW YORK.			
Olivet Brothers.....			
L. Shanley Davis.....	8q	4-5p	
Charles N. Snyder.....			
BOSTON.			
Bennett, Rand & Co.....			
C. E. Morrison & Co.....			
J. D. Mead Co.....			
PROVIDENCE.			
George Hawes & Sons.....			
E. E. White & Co.....			
NEWARK.			
E. E. Bergen.....	7-8q	8-10	
C. Walters & Co.....	7-8q	10-12	
PITTSBURG.			
Somers Brothers & Co.....			
John Wallace.....			
SPRINGFIELD.			
B. Frank Steele.....			
HARTFORD.			
C. S. Brewer & Co.....			
NEW HAVEN.			
Stowe & Schoonmaker.....			
SCRANTON.			
J. T. Porter.....			
WILKSBARRE.			
Sherman & Lathrop.....			

Buzby & Shinn, "market clean." C. Walters & Co., "do well to-morrow, ship heavy." Meyers & Smith, "reds not moving." L. Shanley Davis, "selling slow." B. F. Steele, "berries very soft, will do best I can."

From this you will perceive that the markets are not sought to be confined to one or two points; and you will understand what is meant when I asked that you retaliate by sending your products to those sections that furnish the first supplies for our markets. I have not time to enter into every detail of this method of marketing.

Another excellent plan is to have the markets at your depot, and this will soon follow if you are once firmly established in this line of business. Agents from the large commission houses of distributing centres will be sent to the principal points of shipment, and you have at once a home market.

The matter of transportation and freight rates, the furnishing of boxes, crates, &c., are all details that can be adjusted as soon as you are ready to act together.

I have mentioned this method as being practiced in one section of the State, in hopes that similar efforts will be put forth in other counties, to facilitate the marketing of dairy and other products.

FRUITS—FLOWERS.

I would like to direct your attention to another matter of interest—that of a supply of small fruits for home consumption.

I can think of no reasonable excuse for farmers depriving themselves and their families of these God-given foods, which are to be had in such great abundance, and at such small cost. No garden is complete without a strawberry bed, at least fifty blackberry and raspberry plants, and an equal number of currant and gooseberry bushes, and a dozen grape vines. The outlay for these is small, and excellent varieties of all of them, adapted to all soils, can be procured of nurserymen and plant growers in almost any neighborhood.

Do not buy new varieties with wonderful pedigrees, and high-sounding names, of traveling salesmen, from nurseries hundreds of miles away, and at exorbitant prices.

(The recommendation with regard to the careful testing of seeds applies with equal force in these matters.) Better, by far, patronize your home nurseryman, and receive the benefit of his tests and experience in selecting the varieties best adapted to your locality and soil.

While making these purchases for the garden do not neglect the lawn ; get a few ornamental shrubs and trees, and a few flowers and plants, and after you have set them in your doorway you will feel pleased with the investment, your home will be more "home-like," and your family will thank you for your consideration, not perhaps in loud words or expressions, yet an increased interest in their home surroundings will give you ample proof that the outlay is appreciated.

EDUCATION.

The education of the sons and daughters of farmers is a subject I cannot refrain from touching upon, before closing these remarks.

The present public school system of our State is designed to give every child an opportunity of acquiring gratuitously a fair education, and it is a criminal neglect on the part of parents to allow such opportunities to be lost. As one generation passes away and is succeeded by another the demands of our education are extended, and the education of the succeeding generations should be such as to fit them for the advanced positions they are expected to occupy.

After acquiring a knowledge of the elementary branches—orthography, reading, geography, history, grammar, penmanship, and mathematics—a more advanced course is needed. A knowledge of chemistry, botany, book-keeping, geology, the higher mathematics, including surveying, are essential qualifications for the farmer of to-day, and those of the fast approaching twentieth century.

I am not one of those who believe in the danger of what is termed the "over-education" of farmers' children. If education teaches them the errors of their ancestors, and how to overcome drudgery by thought—the triumph of mind over matter—it is to their credit and advantage, and better fits them for the sphere of usefulness they are destined to occupy. It is not their scholastic education that leads them to avoid the life of a farmer and his calling—it is their home training. If your children are trained in their early youth to despise rural pursuits and surroundings, and to regard the business of their parents as degrading, through the neglect of the parents to take proper measures to make the

lives of their children pleasurable at home, they will enter upon the task of securing a good education for the sole purpose, and with the sole ambition, of enabling themselves to enter upon some other field of employment, more congenial to their tastes, and they leave the school-room feeling that their place is no longer on the farm, and they have no further interest in its operations. Discontent prevails all around—the parents regret the time spent, and the expense incurred, and the child longs to try something that it believes itself entitled to undertake, by reason of its educational advantages, and seeks some other employment. A separation soon follows, resulting, in many instances, disastrously to both parent and child, and the blame is laid at the door of education.

If parents think their children better than themselves, and prefer to do all the work and chores, allowing the children to sit in idleness, drumming on the piano or organ, making fancy work, attending horse races, base ball matches, boating or fishing, excursions, &c., they have but little right to complain of the shiftlessness of their children.

It must not be understood from this that I demand a constant application to work, with no recreation; this course is as injurious as the former. What I do demand is that you seek, first of all, to imprint upon the minds of your children the fact that your calling is honorable and respectable, and that it commands as great a distinction in the social, moral and intellectual world as a manufacturing, mercantile, or professional calling.

Teach them every detail of the management of your farm, without over-burdening them; get them interested in the farm work; give them an interest in some particular branch; make their home pleasant for them; allow them suitable moral amusements, and, my word for it, you will not complain of the result of "over-education."

POLITICS.

I am aware that it is usual for speakers at agricultural meetings either to refuse to talk politics, or else recommend the farmers to form a party, and move the whole machinery of the Government according to their own notions; in most cases they adroitly manage to sharpen a little hatchet of their own, and

sometimes it is a *very* small one. Yet, being aware of these facts, I shall venture to talk on matters that are termed politics for a while, and I shall commence at once with the subject of protection. We hear a great deal about the tariff—a protective tariff. Yes, that is just what I want—a tariff that will protect the farmers of the United States from the competition of Europe and British America. So long as the tariff laws allow hundreds of thousands of bushels of white potatoes to be landed in our markets at present prices, just so long you can calculate that the maximum price for this staple has been reached, and that, too, with thousands of acres of productive potato lands remaining idle. What is true of the potato trade is equally true of cabbage and other products. Holland is competing with you for this trade in your own markets, and India says we shall not sell our wheat in New York for one dollar per bushel, unless we take a portion of her product.

The resolution presented by the Camden County Board of Agriculture is a pertinent question, and I heartily commend it for your consideration. This is the kind of protection I want. If it is right for the people of America to be clothed with goods of American manufacture, and be supplied with machinery, the handiwork of American mechanics, and all of these workers to be protected from foreign competition by a high tariff, is it asking too much that the American farmers be allowed to feed the people of America with the products of American soil? Yet, when we asked for protection from imitation butter we were told that we were robbing the poor man's table, and when the wool growers asked for an increased duty on wool they were told that it would increase the cost of the poor man's clothing.

This is the cry of the demagogues, and it is these same demagogues who are largely responsible for so much agitation of what is termed the "Labor Question," and the sooner the honest laborer of this country awakens to a realization of this truth the better it will be for the welfare of himself and his family. If they will stop long enough to look back they will see that legislation upon almost every subject they have demanded has resulted in placing one of these demagogues in a lucrative position. When the office did not exist it was created, and when not obtainable through legislation it was established in their

own organization. The laborer is being taught that he must work and pay taxes to support in absolute idleness worthless tramps, vagabonds and desperadoes in our almshouses and prisons. He must not allow apprentices to learn trades, or become skilled laborers. He must pay heavy assessments to assist in the maintenance of his organization, and when all these demands on his hard earnings make it difficult to keep the wolf from the door he must strike for higher wages, and this, too, at a time when the purchasing power of a dollar was never greater, for I do not think there is any one with us to-day who can remember when more groceries, provisions and clothing could be purchased for a dollar than can be purchased for that sum to-day.

They talk of oleomargarine being the poor man's butter, but why is not the poor man entitled to genuine butter as well as his more opulent neighbor? There is no danger of exorbitant prices being obtained for butter by our dairymen, for wool by our wool growers, or by our farmers for any product, if they are given a fair chance, or an exclusive market. Only let them know they have a sale for their productions, at reasonable prices, and it will be the first instance, to my knowledge, that they did not more than meet the demand, and over-stock the market, within two years.

The past century has been one of great advancement in the wealth, commercial intercourse, business enterprise, and condition of the country.

The condition of the wage workers ninety-six years ago is fittingly illustrated by Professor Thompson, who in an address on wages, before the students of Harvard University, gives many facts of curious interest in connection with the subject I have just touched upon. I quote the following from a recent issue of the *Scientific American* :

"In 1793 the Schuylkill & Susquehanna Canal Company advertised for working men, offering \$5 a month for the winter months, and \$6 for summer, with board and lodging. The next year there was a debate in the House of Representatives which brought out the fact that soldiers got but \$3 a month. A Vermont member, discussing the proposal to raise it to \$4, said that in his State men were hired for £18 a year, or \$4 a month, with board and clothing. Mr. Wadsworth, of Pennsylvania, said: "In the states

north of Pennsylvania the wages of the common laborer are not, upon the whole, superior to those of the common soldier." In 1797 a Rhode Island farmer hired a good farm hand at \$4 a month, and \$5 a month was paid to those who got employment for the eight busy months of the farmer's year.

A strong boy could be had at that time in Connecticut for \$1 a month through these months, and he earned it by working from daybreak until eight or nine o'clock at night. He could buy a coarse cotton shirt with the earnings of three months. The farmers could pay no better, for the prices they got for produce were wretched. Butter sold at eight cents a pound, and when it suddenly rose to ten cents, several farmers' wives and daughters went out of their minds with excitement. Women picked the wool off the bushes and briars, where the sheep had left it, and spun and knit it into mittens to earn \$1 a year by this toilsome business. They hired out as help for twenty-five cents a month, and their board.

By a day's hard work at the spinning wheel a woman and a girl together could earn twelve cents.

As late as 1821 the best farm hands could be had for twenty-five cents a day, and twice as much in mowing time. Matthew Carey, in his letters on "The Charities of Philadelphia," (1829) gives a painful picture of the working classes at their time. Every avenue to employment was choked with applicants. Men left the cities to find work on the canals, at from sixty to seventy-five cents a day, and to encounter the malaria, which laid them low in numbers. The highest wages paid to women were twenty-five cents a day, and even the women who made clothes for the arsenal were paid by the government at no higher rates. When ladies of the city begged for an improvement of this rate, the Secretary hesitated lest it should disarrange the relations of capital and labor throughout the city. Poor people died with cold and want every winter in the city, and the fact seems to have made an impression only on benevolently disposed persons like Mr. Carey.

If Professor Thompson is correct in his statements, and we have nothing to prove that he is not, comment and comparison by me are entirely unnecessary, and I leave the subject with you.

My critics may say that I am not a friend of the laborer, but I

do not intend to let them be my judges ; I honor and respect the honest wage-workers of the country, and for over thirty years I have labored daily upon the farm. During twenty years of that time I never employed a hand to perform that class of labor which I did not make a full hand at myself. I feel that I know something about labor, and still have some interest in its welfare.

It is truly said that "the homes of a nation are its strongest forts." To make those-forts impregnable it is only necessary that the homes should be the abodes of a contented and prosperous people.

A great deal is said about the frauds, corruption and rottenness of our political institutions and I do not attempt to deny that there is some foundation for these charges ; yet these frauds are the direct fruits of idleness. When men are idle there is a strong tendency to viciousness, and they seek to maintain these idle habits at whatever cost, save that of honest toil. There is no excuse for idleness in this country, and if one man refuses to work at a certain rate of wages, no one can gainsay his right to refuse, but, when he attempts to prevent another from obtaining employment, that moment he becomes an usurper and trespasser, and strikes a blow at the fundamental principles of our institutions.

There is no cause for fear for the future of our country while the masses remain pure and virtuous. The homes of a nation may be its strongest forts, yet its safety depends upon the honor, purity and virtue of its people, and the sacred unity of its Country Homes.

ADDRESS

BY HON. W. H. HATCH, MEMBER OF CONGRESS FROM MISSOURI,
AND CHAIRMAN OF THE COMMITTEE ON AGRICULTURE.

1893

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ADDRESS.

BY HON. W. H. HATCH.

Mr. President and Governor :

GENTLEMEN : After this very hospitable and kindly introduction of my personal friend and late colleague in the House, I feel that I must offer you no apology, for I never offer an apology when I present myself before the representatives of the agricultural interests of the United States, but rather an explanation that the duties in my keeping and care as Chairman of the Committee on Agriculture have kept me so completely occupied since I had the honor of receiving an invitation from this body, that I have not had the time to make any preparation to deliver you anything like a set address. I expected to have had time on reaching your city to have received my inspiration from the Governor of the State, but he hurried me out of his office as soon as I broached the subject to him. He said he was not competent to instruct the Chairman of the Committee on Agriculture as to what kind of an address I should make to the New Jersey State Board of Agriculture.

I am not in the habit of addressing bodies of agriculturists in the East, and this is the first time that I have been honored by appearing before a New Jersey audience of agriculturists, and I shall have to speak to you to-night from the standpoint of a Western farmer, because I am one, and a representative of Western farmers. I honor the invitation I have received from you too much to simply come before you to-night and endeavor to talk to you upon topics upon which we may both agree, simply to elicit your commendation and applause. I am in the habit, when I address representative farmers, to occasionally antagonize, and to present views upon which we do not all agree, to find out what is best for the farming interests of this country.

As legislators, a large portion, in fact the greater part, of our duties are unpartisan; they are not sectional; they apply as well to the East as to the West. And in all measures affecting the interests of agriculturists all over the country, gentlemen upon both sides of the House of Representatives, gentlemen from every section of this broad land, earnestly come together upon a common platform. You have repeatedly witnessed this in the House of Representatives, and it is a great pleasure to me that this is so. I do not propose, in anything that I may say to you to-night, to speak from the standpoint of a partisan, and you, and both of these distinguished gentlemen (referring to His Excellency Robert S. Green, Governor, and Hon. James Buchanan, Member of Congress), Representatives of the State of New Jersey in the National Congress, know that in political matters I am a partisan. I believe in political parties. I like a politician, whether I agree with him or not, if he is earnest and firm in his own convictions. I have believed for many years that the perpetuity of our form of government, its future prosperity and grandeur, depend to a great extent upon the organization of great political parties in this country. The party that is out of power is always watching the party that is in power. It is because our people divide into great political parties upon great economic questions that we are so strong as a republic, and I hope never again to see in my lifetime a division of the people of the United States upon sectional questions. (Applause.) It has been the bane and downfall of every republic ever inaugurated upon the earth, until the great American Republic was founded a hundred years ago. But so many of these questions of national legislation affect all of our people alike that gentlemen who have strong political convictions, upon the one side or the other, can stand upon this common platform.

I recognize the fact that I am addressing to-night the representatives of the greatest industry in this great republic of ours—greatest, because more than one-half of the people of the United States are directly interested in agriculture; greatest, because more than one-half, almost two-thirds, of that wealth which has made the American Government to-day what it is, is the direct product of agriculture. (Applause). How much would your great railroad corporations pay in dividends semi-annually upon

their stock, if it was not for the products of agriculture which they transport? What has made the bonded debt of the United States, the bonded obligations of this government, to-day the highest in price in the great markets of the world, except the products of agriculture that have made this magnificent balance of trade in our favor for the last twenty years? I shall not forget that fact when I am speaking to the representatives of that agricultural community in my judgment the most favored of any upon the American continent. The New Jersey farmer, in my opinion, is the best located farmer in the United States to make money out of his land. Here is a magnificent city within a few miles on the one side of you, and the great emporium of America upon the other. You are nearer to the market than we are; you are more favored than your Western brethren. Everything raised upon a New Jersey farm has a market at home. And from that standpoint you have perhaps different views upon some of these economic questions from those entertained by the great body of agriculturists in the Mississippi valley. And yet, situated as you are, with better prices than agricultural products are bringing anywhere else in the United States, the oldest farmer in this assembly has never seen the time when the returns of agriculture were less remunerative in New Jersey than they are now in 1887. (Applause.) You are working to-day upon a smaller margin, and are making a smaller profit, than you ever made before. I do not believe that any gentleman, whether he be in the American Congress, or out of it, can come before this intelligent body to-night, and state to you that he can give you the causes of this depression in the prices of agricultural products. I do not believe in quackery, either in medicine, politics, or anything else. And I do not believe that there is any quack remedy for the present condition of things. In the first place, I do not believe, as I have stated, that any gentleman can point out with certainty what has brought it about; yet I do believe that he can demonstrate to you that legislation in this country and abroad has had something to do with the present condition of the prices of agricultural products throughout the world.

We have heard a great deal in the past few years, since the publication of the census report for 1880, about the marvelous

advance in wealth of this favored land of ours ; it is a matter of national pride ; it is demonstrated by figures. There is no question that in the decade between 1870 and 1880, this country had made an unparalleled advance in the material wealth of the people. But who got it ? Where is it located ? Are the farmers in New Jersey richer than they were ten years ago ? Have you accumulated, within the past ten years, more rapidly than in any other period in the history of agriculture in New Jersey ? If you have, it is different from the condition of things in the great Mississippi Valley. The country has grown rich, but what portion of its people have grown rich in the past ten years. I am not a very old man—I do not know that it is necessary to tell how old we are, Governor ; we are much the same age—but I can remember very distinctly when two-thirds of all the money lent in the county where I live to-day was lent by farmers. I remember very well that it was the rule that farmers had money in bank. I can remember very well when my father could go to any of his dozen neighbors and borrow two thousand dollars, or more ; he never dreamed of going to a bank to get it. Now it is the rarest thing in our country, (and I expect New Jersey is no exception) that a man goes to a farmer to borrow money. He goes to the bank—to a money-lender. You work as hard as you ever did, and I think as a rule farmers have gained in intelligence, have gained in the methods of labor ; they are as industrious, as frugal, as they were twenty-five or thirty years ago ; but you are not making money as you did then. There is some good reason for it, and that it is a fact the census reports of 1880 demonstrate beyond question. Let me read you a single paragraph.

“ By the census of 1850, the estimated value of farms in the United States was \$3,271,575,000. In 1860, they were valued at \$6,535,000,000, showing an increase of more than one hundred per cent. In 1870 the value of the farms was estimated at \$9,262,000,000, showing an increase during the decade of \$2,627,000,000, or less than forty per cent. In 1880 the value of the farms was estimated at \$10,197,000,000, being an increase, during the decade, of \$935,000,000, or only a fraction over nine per cent.

The value of the live stock in the United States, in 1850, was estimated at \$544,000,000, and in 1860 at \$1,089,000,000, being

an increase, during the decade, of \$545,000,000, or more than one hundred per cent. In 1870 it was estimated at \$1,525,000,000, being an increase, during the decade, of \$435,000,000, or less than forty per cent. In 1880 the live stock was estimated at \$1,500,000,000, being a decrease, during the decade of \$25,000,000."

There is no question that during these periods the general prosperity, the general wealth, increased; but the farmers have not got it. That wealth has run in other channels at the expense of the agriculturists of the country.

Now we have a great national debt, and farmers are paying their proportion of it; you are paying it every day of your lives. And do you ever stop to consider how this debt has grown upon the farmer in the last twenty years? You flatter yourselves, (and all of us have been doing it,) that we have been decreasing the national debt year after year. It is a fact as far as figures go. It has been decreased by the payment of millions and millions of money by the people of the United States. To the farmers of New Jersey, and of the whole United States, that debt to-day is larger than it was twenty years ago. Why? Let me illustrate it. Show me a farmer that owes a thousand dollars. How many bushels of wheat has he to raise to pay that sum? He gets his money out of his toil and soil. At two dollars a bushel, which was the price of wheat twenty years ago, he could have paid that thousand dollars with five hundred bushels of wheat. Now he has to work twice as hard, for it takes to-day more than a thousand bushels to pay a thousand dollars, where it took but five hundred bushels twenty years ago; and if I did not know that it would tire you to give a recital of figures, I might tell you that it takes to-day more than twice as many bales of cotton to pay that debt, and how many pounds of tobacco would pay it as compared with twenty years ago?

Estimated by the toil of the farmer to-day, your public debt is larger than it was twenty years ago. In other words, you have to work as hard to pay fifty cents to-day, as you had to work twenty years ago to pay a dollar. I know that if a man has a thousand dollars in bank that his thousand dollars is still a thousand dollars. But show me a farmer that has a mortgage of a thousand dollars upon his farm; he will have to work upon that

farm to pay that debt, and if you depress the prices of his products, you increase the labor and time that he must put upon it to pay that debt.

I know how easily that debt comes to the farmer; it comes sugar-coated; it is discussed as a blessing; it comes with the soft gloved hand of the national government, and we pay it day by day, and it is a drainage upon our people. I have no doubt in the world that I am addressing gentlemen in this audience to-night who believe that it is the best thing that ever happened to this country, but I do not. I know how easily this tax is taken from you; how insidiously it is taken from you day by day, and week by week, without your feeling it. I have often likened it to the scene when I was a boy, when my father was a practicing physician of the old school, when I was often called to his office to hold a gentleman's head while my father pulled his tooth; or to hold a patient's arm to bleed him with the old-fashioned lancet. The old-fashioned way of bleeding a patient was to let him see the bleeding done, but the doctors of the present day have learned a trick or two. (Applause.) The modern physician comes in with a smile, and simply rolls the patient over on his elbow, and behind his back, where he cannot see it, he attaches his leeches, and lets them suck the blood out of him. (Laughter.) That is federal taxation; it is the leech upon the farmer that draws the money out of his pocket drop by drop and penny by penny, and he never feels it. And the only difference between the medical profession of to-day and this federal system of taxation, is that the doctor takes off his leech, but it is the hardest thing in the world to get our federal government to take off this leech of taxation. (Laughter and applause.)

I most earnestly, sincerely and conscientiously believe, for I have been watching it in our own country for the last ten or fifteen years, that a government that will exact more tribute from the laboring masses of its people than it needs for the economic administration of its affairs is doing wrong. I am not going to trench upon any question of taxation or tariff. I am simply going to state the broad proposition, and all men of whatever pursuit can stand upon this common platform, and that is, that the government of the United States shall simply exact that taxation which it requires for the legitimate needs of the govern-

ment. (Applause). That we have been taking too much from the people of the United States, the vaults of the national treasury show to-day. Whose money is locked up there? What is a surplus when exacted by a government from its people? It is simply the amount of robbery. The government of the United States does not own a dollar in the world, and has not a dollar, that it did not get from its own people. Has it any right to exact from the toiling masses more than it needs for the administration of that government? Not a dollar; and that money has been taken largely from the agriculturists of the country, and it is your money to-day. I call it the farmers' blood-fund, piled up in Washington. (Applause and Laughter).

And it hurts everybody. It hurts not only the farmer from whom it is taken, but it hurts your manufacturer and laborer as much. It hurts every branch of trade in the United States, because they are taking from the arteries of commerce those millions of dollars which are being stored at Washington. Leave the money where it belongs—with the people—and the people will find a way of making it valuable. What the farmer does not need the manufacturer does, and the merchant does; and they will all keep it among them, if you leave it in the channels of trade.

I want to direct your attention to one suggestion to-night, and it is this: Watch the amount of this sum they call the surplus, that is taken by taxation out of the returns of trade and commerce, from the toiling masses of the people, and add to that, that contraction of your currency that is going on by reason of the payment of your public debt and calling in the circulation of the national banks, and see how much circulating medium the people will have to carry on their work-shops, their manufactories, and their farms, in every conceivable direction. Did you ever see high rates of interest in the money market that the farmer did not suffer? If you want to ruin a farm put a mortgage on it. If you want to ruin the prospects of any farmer in New Jersey, simply put him in debt and compel him to pay a high rate of interest; and that, added to his ordinary expenses, and see how long it will be before the Sheriff will be at his door. The great agricultural interests of this country always prospered when the general trade was best, when the circulating medium was ample for the com-

merce and trade of the country, and when prices were generous, and people had something to spend; because when they begin to pinch, it is the products of the farm that are first pinched.

Now we hear a great deal, and in Congress every week, about the competition of pauper labor in Europe and other countries, and representatives of New Jersey, and of other Eastern States, and some of the Western States, grow wonderfully eloquent when they talk about the very idea of an American citizen getting in competition with the pauper labor of Europe. They say it is an outrage and unpatriotic. They ought to do everything in their power to avert it. Tell me, you farmers, that are wheat growers in this country, tell me what sort of labor you come into competition with when your wheat reaches the market at Liverpool? The poorest paid pauper labor of the world to-day, that of India. The price of your wheat to-day is fixed by the India wheat that reaches the Liverpool market, and you come into competition with that class of people who live on rats and rice and a penny a day. (Laughter.) But you never hear a word said about the farmer coming into competition with pauper labor. (Applause.) If we did not raise any more in this country than we can consume, it would not make any difference to us what price wheat was in Liverpool, but we have to ship a great surplus of our agricultural products to foreign markets, and the price of that surplus, to a very large extent, fixes the price of that entire product in your home market. Every farmer in New Jersey knows the fact that wheat is selling at lower prices in London to-day than it has brought for one hundred and twenty years; and what is true of wheat is approximately true of all the great farm products.

A member of Congress from the State of Georgia, whom you know very well, stated within the last week, upon the floor of the House, that he was a cotton planter; that he had means, without the aid of the commission merchant, to buy all his supplies; that he had not paid a single dollar of interest within the last three years; that he had been a cotton planter all his life; and that he had raised and sold three successive crops of cotton at a loss, and that he had not made a single dollar upon his cotton. Why? Because the cotton raised in India by pauper labor had driven the prices down in the Liverpool market until the Georgia

planter can no longer compete with it. Shall we be protected? Shall not farmers be protected from pauper labor? Not by direct legislation, because that you cannot do. We have to sell our products abroad, and you cannot compel other nations to take them at our prices. There is no way of controlling them in that direction.

We have not only been selling our products in competition with pauper labor in Europe and Asia, but we have been selling the toil of our households, even the handiwork of our wives and daughters, in competition with frauds and counterfeiters in the United States. We have been selling butter in competition with oleomargarine. (Applause.) And they even said that it was unconstitutional to levy a tax upon that infamous product in order to protect the farmer. Yes, I have found out that in the midst of a good many gentlemen, anything that is introduced in the National Legislature for the protection of the farmer is either buncombe, or unconstitutional. (Applause.) If they cannot ridicule it, they declare it unconstitutional. I have a high appreciation of the wisdom of the men who framed our constitution, because I have an adoration for it second only to that which I have for the family Bible, in which I was taught, at my mother's knee, the precepts of christianity. I believe in the constitution as I believe in the Bible. The highest evidence of the divinity of the Bible is the fact that for eighteen hundred years it has suited all classes and conditions of men, from the ablest and most learned down to the poorest peasant that could read the simple story of the cross. (Applause). And the strongest evidence to the human mind of the wisdom and divine inspiration of our constitution is the fact that it has suited for a hundred years every condition of this mighty republic, from its infancy to its manhood. But when I feel that the constitution does not embrace within its conditions the great agricultural interests of our country, then I am in favor of a new constitution; then I want a change in a constitution that violates every other industry of the country, and especially the foundation of all industries. I know that I am speaking in the midst of the most magnificent manufacturing districts of the world, right in this part of New Jersey; and yet, what would your manufacturing interests be, if it were not for the foundation upon which they

rest—the agricultural industry of the country. Your magnificent manufacturing interests can not exist without the agricultural, any more than you could have the dome of this Capitol without its foundation.

I remember that in the early days of the republic, commerce was always spoken of as the “handmaid of agriculture;” now they treat commerce as a mistress. (Laughter.) They have actually chained agriculture to the car of commerce, as a slave. I have been trying, during my legislative career, to break some links in that chain, and if God spares me until the close I never intend to cease my efforts until they are all broken (applause), and until your legislators will speak of agriculture as your forefathers spoke of it.

One gentleman stated upon the floor of the House of Representatives that he did not believe that the word “agriculture” was in the constitution. Why, the whole constitution rests on that industry; it was *all* agriculture when the constitution was made. He did not want to vote for a Department of Agriculture, because he did not find the word “agriculture” in the constitution. (Laughter.)

Now, gentlemen, I said to you that I believed that I could give one or two reasons contributing to the present condition of things from an agricultural standpoint. I have already adverted to one—unnecessary taxation. It is a serious one. The contraction of the currency, or want of an abundant currency, is another. But whilst I have promised not to state anything to-night that would look like politics in this address, I hope you will pardon me when I say to you candidly, and I do not mean it from a partisan, but from an agricultural standpoint, that the demonetization of silver has had much to do with the depressed condition of our agricultural interests. I know, from figures, that for ten years prior to the demonetization of silver, wheat sold in the New York market, based upon a gold basis of \$2.10 per bushel, and for the ten years succeeding the demonetization of silver, wheat has sold in the New York market for an average price of \$1.20; and within the last five years it has gone far below that. I believe that the action of Germany and England, followed by that of the United States, depreciating silver throughout the world, has had much to do with the depreciation

of farming products. The merchant in Liverpool takes his ten thousand pounds to the Bank of England, and gets exchange upon India, and in that depreciated silver currency of ten to twenty per cent. he buys his wheat in India, and takes it to the Liverpool market and that market controls the products shipped from the United States.

I do not expect that all of my agricultural friends, or all the farmers of New Jersey, to agree with me upon this proposition; but as I said in the beginning of this address, I did not come to tickle your fancy, but to tell you candidly what I believe to be the condition of the farming industry of the country. If I am wrong, I desire to have your Representatives convince me upon the floor of the House that I am. If I am right, I hope to win some of them over to my side.

Then again, the farmer has not only to contend with all this, but there is another question in the United States that is beyond National legislation, but it is not beyond State legislation. I don't know that it exists in the State of New Jersey, but it is on the one side or the other. There is no other enemy that, like the chinch-bug, works daily and nightly, but his worst enemy, the gamblers in grain. (Applause.) These boards of trade, that put the farmer's wheat up long before he gets it in the market, and sell it for prices simply to suit themselves, are aided by that combination upon the other side of the water. We all know that there is not a farmer in this audience, or in New Jersey to-day, that controls the price of the stock and grain that he raises. Do you raise large numbers of horses or fatten large herds of cattle? If you do, show me a farmer that takes a hundred head of beef cattle to the New York market, and tell me who fixes the price on his stock after he gets there? When our farmers go to the Chicago market, the packers fix the prices, and the man that carries his stock there has no more control over that price than if he lived in one of the stars. He simply takes what they give him. And that price is largely fixed by what has transpired upon the Board of Trade within the ten, fifteen or twenty days preceding. It depends upon whether the longs or shorts control the market—not that I know anything about these phrases. I have known corn to sell in the Chicago market for forty cents a bushel, and wheat at a dollar a bushel,

when within a hundred miles of Chicago corn was worth ten cents more a bushel, and wheat was worth ten cents more a bushel, or ten or fifteen cents less a bushel, simply because they call that a settling day. One day they had corn up to \$1.25, while it was worth in our State but forty cents or less; the supply and demand had nothing in the world to do with it.

All this, gentlemen, is beyond the power of the national legislature. But I say to you, Governor, it is in your power, at any time within your administration, to recommend to the Legislature of New Jersey, if they ever organize, (laughter and applause) to recommend to them to put all gambling upon the same plane. Take the gambler who trades upon the products of your State, and put him on the same plane with the three card monte man. Recommend it, and generations from now the people of New Jersey will rise up and call you blessed. (Applause.)

Gentlemen, I am very grateful for the kind and hospitable reception you have given me. I felt honored in this invitation, and I only regret that it has not been in my power to have given you an address more suitable to the character of this assemblage and the dignity of this occasion. I thank you very kindly for your attention. (Great applause.)

ADDRESS

BY HON. FRANK H. HURD, EX-CONGRESSMAN FROM OHIO.

' *SUBJECT*': A TARIFF FOR REVENUE ONLY AND ITS EFFECTS ON THE INTERESTS OF THE FARMER.

ADDRESS

BY HON. FRANK H. HURD, OF TOLEDO, OHIO.

MR. PRESIDENT AND GENTLEMEN: The magnificence of the resources of American agriculture can never be realized except by one who has traveled over its vast domain. Starting from a point in Ohio, close to the centre of population, go southward through the blue-grass regions of Kentucky, with its herds of blooded stock, through the fields of the broad-leaved tobacco of Virginia and North Carolina, to the swamps of the Atlantic coast, where the rice luxuriantly grows, over the fields white with bursting bolls of the ripened cotton, to the plantations of the sugar cane ; or northward through the winter wheat belt of Ohio and Michigan, where the growing grain blade is kept warm by the frosts and the snow, to the spring wheat regions of Dakota and Minnesota, to the limitless forests of the far West, filled with the choicest woods ; or to the westward over the prairies with the wide fields of growing, waving corn, or ripened and gathered into wigwams that stand as far as the eye can reach, until you approach the very confines of civilization ; or to the eastward, through Pennsylvania, where, notwithstanding the development of its manufactures, agriculture is still the chief interest, to your own sturdy State, with its fields so scientifically tilled, rich in the choicest vegetables and fruits, as well as in the cereals—and behold as you go, how perfect a picture of rural peace and promise ; how infinite almost the resources and products of every clime and zone ; how rich the fruitage and the harvests ; how continuous the sowing and the gathering, and how stupendous the possibilities of development. In no other land under the sun does agriculture so assert its supremacy, and so wield its sceptre, as here, with its mines of wealth and its possibilities of growth.

It is manifest, therefore, that there must be a large proportion of our population interested in the business of husbandry. The statistics of the census of 1880 show that more than one-half of the population of the United States was engaged in farming. And when you consider the others who are dependent upon it; for example, the manufacturers of agricultural implements and tools, and of all the articles of ordinary farm use, and the builders and operators of railroads for transporting the agricultural products, and the merchants of the country, and the blacksmiths, and the millers, it will not be an exaggeration to say that more than three-fourths of the people are interested directly in farming; so much so that if the fields should lose their power of yielding, three-fourths of the people of this country would be without occupation.

I maintain that upon the principle of the greatest good to the greatest number, the interests of the farmer should be first consulted in every measure of legislation. If there be any business to be postponed, or ignored, or burdened, it should not be that in which three-fourths of our population are engaged.

Now, my friends, I propose that you shall consider to-night the measures of federal taxation by which the interests of the farmers are affected, and it is my present purpose to show to you that the system of federal taxation, as it is embraced in the statute laws of the United States upon the subject of the tariff, is injurious to the farmer, robs him of the profits of his toil, curtails his market, increases the expenses of his living, and compels him practically to be the serf of other established interests of the country.

It is important, at the very threshold of this discussion, that I should define the terms I intend to employ. A tariff is a tax upon imported articles, and when that tax is levied like other taxes, for the support of the Government, it is called a tariff for revenue; but when it is imposed for the purpose of assisting private individuals in their personal enterprises, it is called a protective tariff. To the first I do not intend to make any objection to-night, but to the latter I shall make opposition upon the ground that it is injurious to the farmer.

A tariff operates to protect private citizens by relieving them from foreign competition, which is done by putting a duty upon

a foreign article which shall increase its price in the home market, so that the American producer of the similar article shall be able to undersell it. When the duty is so high that the foreign article cannot be imported into the country at all, or that it cannot be imported into the country at a profit to the importer, then the American producer is said to be protected.

It is manifest, my friends, that the only way in which this protection can operate is by increasing the price of the foreign article; for it is inevitable that the importer, who has paid the duty to the Federal government, will charge to the buyer the cost of the duty paid. But that is not all. This same duty which is put upon the foreign article operates as well to enhance the price of the domestic one. If it did not, there would be no object in the American producer to advocate a system of protection.

An illustration will explain to you how it operates. Suppose that under free trade a piece of woolen goods should be worth \$100; that it is the price fixed by competition between all the markets in the world. But the American maker of that cloth is not satisfied with his profits, and he asks Congress to put a duty of one hundred per cent. upon that piece of woolen goods, and all similar pieces. We will suppose that the law is passed, and what is the result? Every importer of woolen goods has to pay upon a piece like that \$100, and he increases its price to \$200. Does anybody suppose that the American producer of woolen goods still sells his piece at the same old price of \$100? No; he raises it to \$185 or \$190, and keeps it there as near as he can, just under the price at which the foreign article can be profitably imported into this country by American necessity of foreign importations.

Now, you will observe that the effect of the operation of the tariff law is to increase the price of the foreign article to the whole extent of the duty levied, and of the domestic article to a sum just under that at which the foreign importation can be made profitable. It is plain, therefore, my friends, that the whole basis and foundation of the protective tariff is an increase in the price of articles of consumption. And this is a fact which should not be forgotten in this discussion; it is the keystone of the arch of protection; it is the corner-stone of its foundation. If taken away, the whole system would fall to pieces in a single hour; for

it is its life, and its soul, and its breath. If taken away, avarice would no longer have any temptation to promote it, accumulated wealth would never have any great interest to maintain it, and the people engaged in production, instead of appealing to law-makers for help, would be tempted to increase their market and better their products.

It is asked whether the protective tariff can be of any benefit to the farmer. The question is answered by determining whether it has, or can, increase the price of any of the articles of his production. A priori, one would say that it could not; protection was never invoked for the benefit of the farmer; for very nearly a third of a century there were no duties of any consequence upon agricultural products, excepting rice and sugar, and for a very good reason. The avowed object of the protective tariff from the very beginning was to give the home market to the American manufacturer. Why should it give, or propose to give, a home market to the farmer, if he had it already? The cheapness of our land and the vast extent of our area made it impossible for any foreign importations to disturb one. The business in which he was engaged was a natural one; it needed not the help, nor the stimulus of the law. He was ready to supply the home market, and he always had to deal with the question as to what should be done with the surplus.

But the manufacturer was afraid of the established institutions of the Old World, the technical skill and the more finished products of his competitor, and it was to take this market from the foreign manufacturer, and give it to the domestic one, that protection was proposed. Whatever, my friends, might have been said in favor of giving the home market to the manufacturer, it was idle to talk of giving it to the farmer, because he had it already.

Now what are the chief products of the farmer? Hay, wheat, cotton, corn, oats—five articles of production, the total value of which, in 1880, was \$1,750,000,000. In 1885 we imported of these articles about \$2,000,000, and we exported \$350,000,000 in 1885, and in 1884 and 1885 we exported about \$540,000,000, and in 1885 and 1886, \$484,000,000. It is manifest, therefore, that there is a large surplus of agricultural products, of these five articles, above the American demand. The surplus must be dis-

posed of in some way. It must either remain at home, or it must be sent abroad to be sold. If it remains at home, it remains to diminish the prices in the home market still further. If it is sent abroad, it must be sold in the markets of the world in competition with every farmer in the world, in a competition which determines absolutely the prices. Suppose it be sent to Liverpool, as the greater quantity of it is. There the competition of the world determines the price, not only, my friends, of the article or grain sold there, but of the articles that are sold here at home. For there is direct connection between Liverpool and every market of America where grain is sold—Chicago, Milwaukee, Toledo, New York—and the quotations of Liverpool every morning are communicated to every grain centre of the United States, and thence are sent to every place where grain is sold in this country; and it is the quotation of these articles in Liverpool in the morning which determines the price at every point in the United States that day. And what is it that determines the price of the articles that day in the Liverpool market? I tell you it is the competition between the American farmer and all the farmers of the world. What figure, in fixing the price of grain and of the corn that is sold here at home, does our protective system here in America cut? My friends, the laws of the United States have no extra-territorial jurisdiction; the fostering care of the government can be of little value beyond the national boundaries. As when the boy leaves his father's mansion to go into the activity of the world, he must strike out for himself—so the farmer, when going abroad with his grain, must work out his own destiny. Protection may nurse and coddle at home, but its kindly offices are powerless in the world beyond. It may aid and strengthen any business in process of development, but it has no power abroad. Protection can lead the industries of the United States down to the seashore, but there it must bid good-bye to them. Before them are the oceans, which are free and open for all peoples and all nations and all men. Over them the jurisdiction of no one country can extend. To their waves and storms all are alike committed, to be successful as their own adventures and courage and merits may deserve. It is in the markets of the world that they must make the struggle and determine the result, to be settled, at last, by

the merits of the man's goods, and the skill of his own management, and the accuracy of his own judgment.

The proposition which I maintain in this connection is that the price of all the great surplus of all the five articles to which I have referred, is fixed by an inexorable law of trade, in the foreign market in Liverpool, where the protective tariff is powerless to extend its influence. Whatever that tariff may do here, it is powerless there; and the American citizen, the American farmer, comes into competition there with every other farmer, and no pauper labor of any farming land is excluded. And what I say is true, that the protective tariff cannot increase the price of any one of the five articles which I have named, which constitute 80 per cent. of the agricultural products of America.

But it is said confidently that the tariff increases the price of rice and sugar and wool, and that the farmers should be content with that. It may be as to the first two that such is the result of the tariff, but I say the extent of the area in which this production occurs, and the small number of people who are engaged in this industry, make the amount of the benefit which protection confers insignificant. But when you consider the necessity of sugar and rice in daily life, and their almost universal consumption, it is perfectly apparent to the farmers that the tax on rice and sugar is a burden rather than a benefit.

But it is said that the duty on wool is of benefit to the farmer. Even if that were so, the result would be insignificant, for few farmers follow sheep raising as a business in itself for the purpose of growing wool. The raising of sheep is usually incidental to the general business of husbandry, and whatever help the tariff will give to the general farmer engaged in that as a special branch of his business, its amount would be insignificant.

Yet I deny that the tariff on wool is of any benefit to the wool-grower himself anywhere. There are three grades of wool provided for in the tariff—the superfine or silesian wools, the combing wools, and the coarse carpet wools. As to the superfine or silesian wools, I have this to say: They are grown upon sheep carefully cared for and tended, watched over in small flocks by people who give their whole attention to them—an attention and care which our people will not give. It has been attempted to raise this wool in Vermont and New York and Ohio, and the best

authorities on the subject declare that it is a failure. The wool cannot be produced here.

As to the coarse carpet wools, the same remark, for other reasons, may be made. They are wools grown upon the half-wild sheep of the steppes of Thibet and Asia, taken care of by nomadic tribes. It is a semi-barbarous wool, and cannot be grown here, unless we have semi-barbarous sheep and our flock-masters sink to a semi-barbarous condition. Now, how is it possible for a tariff on coarse carpet wools, and on the silesian wools, to benefit the farmer, who cannot produce these wools at all? It cannot but increase the price to him, for the simple reason that it is not within his power to produce them.

The other wool is the combing or merino wool, and it is said that this wool, and especially that which comes to us from Australia, comes in competition with our farmers. I deny it. For this to be the case, it must appear that the foreign wools are the same as the American; but this cannot be unless the conditions of their growth are the same. Wool is the protection which nature gives to the sheep against the inclemencies of the weather and water, and the seasons would have to be the same there as here to make the wool of Australia and that of America alike. Every one knows that we have our four seasons, and that in Australia they have two seasons—the wet and the dry—and that consequently Australian wool must differ from ours. The difference between them can readily be seen by one not an expert. All wool of every country has a texture and a fiber and a quality of its own. It is impossible to make the best goods from the wool of one country alone. They are made by mixtures of different wools, and the best results can be obtained only by such combinations. And it is this combination of wools that makes it impossible for you to prevent the importation of foreign wools into this country. Germany and other protective countries admit wools free for the reason that I have given, and for the same reason that should permit all the wools of the world to come in here free. If wool were admitted free into this country, not a pound would enter into competition with American wool, but to supplement its deficiencies.

If what I have said is true, it follows that the tariff on wool, instead of being a benefit to the farmer and wool-grower, is

actually an injury to him ; and my friends, that is the case. Our woolen mills, if run to their full capacity, have power to manufacture nearly twice as much wool as we produce. The manufacturers must import the difference if they would be kept busy. But if they are required to pay duties, they will limit their importations and thus their business, or what they are compelled by law to pay for foreign wool, they will attempt to save by reducing the price of domestic wool.

My friends, that is exactly what has been done, as shown by statistics, for during the years between 1846 and 1861, when we had a low tariff, the price of wool was on an average, in the State of New York, four cents per pound more than during the high tariff years after the war. And when in France a reduction in the duty was made by the French Assembly, a statistician was appointed under the last Napoleon to ascertain the effect upon the production of wool. He reported that the price of the domestic wool had risen, because since foreign wool had begun to come in more freely, the domestic fleeces which had been lying in the market unused were sought for the purpose of mixing.

But some persons may ask me how is it to the benefit of the consumer, if the effect of a low tariff is to increase the prices of the domestic wool produced by our own farmers? The answer is very easy. Suppose that the American manufacturers were obliged to pay this year \$10,000,000 duty for foreign wool. Let wool be free, then they could afford to pay \$2,500,000 more to the farmers in America, making a profit of \$2,500,000 more than they made before, and still save to the consumers \$5,000,000 in the price of the articles.

My friends, there is no greater delusion than this, that wool is in any way increased in price to the farmer by the operation of a tariff ; on the contrary, it is an injury to him. And yet this evil consequence is so concealed, and the facts are so presented, that I know of many farmers in Ohio who really advocate the protective system on account of this duty. Protection in this case is really worse than the highway robber who plunders his victim but gives him a chance in a contest of strength, and leaves no doubt, if he be successful, as to the character of his act. But it actually robs the farmer of his profit, and makes him believe that the act of robbery is an act of friendship and kindness.

I insist that there is not one of the articles to which I have referred, and which constitute nearly the whole bulk of the farm products of America, which has been or can be increased in price by the operations of a protective tariff. As I stated awhile ago, the protective tariff proposes to increase prices, but if it does not increase the prices of the farmer's products, then it is of no benefit to him. If this were all of it, it would be easily disposed of. But I wish to call your attention now to a positive injury which it is to farmers, and first in diminishing that which he is obliged to receive for the surplus of his productions abroad. What I mean can be best shown in illustration.

Suppose that a farmer exports one thousand bushels of wheat, and exchanges it in Liverpool for one thousand yards of cloth. The contract is made, and the grain and cloth are delivered. The farmer comes back to this country with his one thousand yards of cloth, and when he reaches New York, he is stopped by the custom house officers, and compelled to pay a tax of fifty per cent. upon the cloth. He pays, goes home, and how much cloth has he got for his own use and enjoyment, as the result of the transaction? To put it into money, suppose that at Liverpool the one thousand bushels of grain and the one thousand yards of cloth were estimated at \$1,000 each, and he comes back to America with \$1,000 of cloth, and he is obliged to pay \$500 into the public treasury—only \$500 worth of his cloth for his \$1,000 worth of grain is left for his use. Or suppose that he is given the money here directly in this country; or suppose that he got the money in Liverpool and came over with it, and desired to buy his cloth here, he would be obliged to pay for it in the home market, enhanced by the fifty per cent duty. In other words, whether he receives money with which he buys his cloth, or imports it, he has in substance at last exchanged the \$1,000 worth of wheat for only \$500.

And this, gentlemen, suggests to me a popular misapprehension that I have observed almost everywhere as to what the true functions of money are. Money is not the thing which is exchanged for a product. It is true a man may receive the money for the product—for his corn, for example—but he does not receive the money to consume, or to wear, or to eat; he receives it for the purpose of exchange. Suppose I have a cow which I

sell for \$100. I may keep that money for five years, and then buy a horse for it; I just as truly exchange the cow for the horse as though the money had not intervened in the transaction. Money is not the object, but the instrumentality of exchange. And this is one of the errors into which protectionists fall. They would put a duty upon everything except money, so as to compel the world to pay us cash for all our products. The absurdity of this proposition will be apparent upon a single statement. Suppose that the world was compelled to pay us cash for all our products, and that their demand for our products was kept up year after year, just as to-day; in about six or seven years we would have all the coin and all the silver in the world. Then what would the people of the world have to offer us for our products? It would be impossible for them to buy of us unless we had taken this coin which they paid to us, to buy their products, so that the coin might be returned to them. And if that is the course to be pursued, why not let the products themselves be exchanged freely in the first instance. My friends, all of this misunderstanding, as I deem it, on the part of the protectionists is the result of the old mercantile theory, which has been repeatedly exploded, but which still exercises its influence over the advocate of protection, for only a short time ago it was put forward by one of the candidates for President. This theory is that the people of a country are better off the more they can get of the coin and the money of the world, and when they export more goods than they import the balance of trade is in their favor, and when they import more than they export, the balance of trade is against them.

A little illustration will expose this fallacy. For instance, a man living in the state of Maine fills a vessel with a cargo of staves. He registers them at the port of departure as worth \$5,000. He takes them to Cuba, where staves are in demand, and exchanges them for a cargo of sugar. This he brings back to the port whence he sailed, and the sugar is registered as worth \$10,000. That man has imported more than he had exported. He has brought in \$5,000 more than he took away. The protectionist says that there is a balance of trade against us of \$5,000, but the economist says that, less the expense of the voyage, the difference is so much added to the wealth of the country, and if there was any balance of trade about it, it was in our favor.

But there is no balance of trade about it. The \$5,000 worth of staves of Maine were worth \$10,000 in Cuba, and what was \$5,000 worth of sugar was worth \$10,000 in Maine. The transaction balances itself. And what is true of that transaction, is true of every transaction of trade. There can, therefore, be no such thing as a national balance of trade, as that only is the aggregation of individual transactions, each one of which balances itself. The fact is that the measure of your exportations is ordinarily the extent of your importations, and the only thing proved where a country exports more than it imports is that it is in debt, which it is paying off by its excess of exportations.

In the second place, the tariff is a burden to the farmer and an injury to him, because it increases the expenses of his living, and of the operation of his farm. On an average, 43 per cent. of the amount the farmer pays for necessaries of living, and for the tools and machinery he needs, is due to the tariff. The annual amount thus forced from the farmer is enormous. A careful statistician says that the farmers of this country are obliged to pay \$750,000,000 every year, and I believe this is a very low estimate. That is, if we had a revenue tariff, limited to the necessities of the government, the farmers of the country would save \$750,000,000 which are taken away from them annually. And from this you see, my friends, how injuriously the tariff operates. The farmer must sell his surplus products at Liverpool prices, in a market of free trade, at prices fixed in the cheapest market; and he buys his articles of consumption in this country, under the operation of a protective tariff. In other words, he buys in the dearest market of the world, and sells in the cheapest.

But, my friends, there is another thought, in the operation of the tariff upon the farmer, which should not be forgotten in this connection. It is the effect of our tariff system upon his foreign market, indispensable to him. In the first place, this market is limited by retaliation. Do you suppose that the world is going to stand quietly by and let you legislate against it without saying anything? High as the wall you build against them, so high will be the wall the world builds against you. If you say to the world "No importations," they will say to you "No exports." It would be unreasonable to expect that if we discriminate against the products of foreign nations, they would not discriminate against ours.

I remember the time when this country shipped millions of bushels of grain annually to Canada. A number of the firms in our city grew rich out of the trade with Canada under the reciprocity treaty. Now Canada has a specific duty of twenty-five cents on a bushel on your wheat, avowedly for the purpose of retaliation.

Recently there has been pending in the Senate of the United States treaties of reciprocity between Mexico and Spain and this country, by which a very close approximation to reciprocity was proposed, showing a disposition on their part to relax their high duties against us, if we were to relax our duties against them.

The prohibition of American pork by Germany and France, while ostensibly for sanitary reasons, has its real origin in a desire to retaliate against our tariff. And within the last four months the tariff in France has been increased sixteen cents a bushel on American wheat, and within the last thirty days the government of France has raised it to twenty-five cents a bushel; and that is the result of a retaliation against the tariff laws of the United States. (Applause). My friends, it is impossible that we shall ask for a cessation of this retaliation, if we continue to be legislating in the interest of selfishness.

There are other nations—or perhaps I had better say there is one other nation which has refused to retaliate against us—Great Britain—which has bought more grain of us than all the rest put together. But what has she done? She has sought to find her wheat elsewhere, from people who will take her products in exchange. I have watched the progress of wheat production in India for the last eight years with the greatest care. There was little wheat production in that country before 1879, for in 1879 the exportation of wheat was scarcely two thousand bushels. But the Marquis of Ripon was appointed Governor General, and sent out by Gladstone's administration, with a view of bringing about an abrogation of the high protective tariff placed upon the products of Great Britain as well as other countries. And as a result of his interposition the tariff laws were repealed and India's markets were opened to the people of the world. Then began the development of the wheat production. Fields which before were un-

cultivated were made cultivable by irrigation. Lines of railroad were built which brought the interior into close connection with the seaboard, and as a result of all these, the production of wheat increased enormously, and its exportation increased from two thousand to forty million bushels. Every bushel of that wheat has displaced an American bushel of wheat. The difference between paying for wheat in cash, and in the products of Great Britain, was enough to justify Great Britain in this enormous expenditure which she made to develop this wheat production. Six years ago I protested that if something were not done to prevent this development of wheat production in India, our wheat would go down from \$1.25 to 75 cents a bushel, and the people have seen the 75 cents a bushel price. What I said then fills me with fear and apprehension now. I believe that unless we do something to make better trade relations with Great Britain, that the price of American wheat will fall below the point at which it is possible to produce it here.

The result, my friends, of this tariff, then, is that the farmer's market is injured in two respects. First, by retaliation, and next by the development of wheat production elsewhere. Both can be made to disappear in an hour, if this government reduces its tariff, or enters into treaties of reciprocity.

It is said that the manufacturing interests of this country have made a market for the farmer ; that he has a home market which they have created. It is perfectly manifest, from what I said a while ago, that in our protective system it was never intended to make a home market for the farmer ; it was intended to protect the home market for the manufacturer. It was not to compel the manufacturer to pay higher prices to the farmer, but the latter to pay higher prices to the former. And if there has been any benefit which comes to the farmer through a home market in this way, it is purely an incidental one, which will be sacrificed when found in the way of benefitting the interests for which the tariff was in the first instance promoted. My friends, I say to you that it is not in the power of manufacturing interests to give a more adequate market to the farmer, and this presents the question of the effect of the tariff upon the manufacturers themselves.

I do not propose to enter into a consideration of the tariff

upon the manufacturer. Let me suggest one or two things to you. My friends, the manufacturer himself is not in a condition to help anybody else ; it is as much as he can do to maintain himself.

I do not believe, in the first place, that there are as many advantages to the manufacturer in the tariff as he usually thinks. There are many classes of manufacturing not benefitted by the tariff. Take those, for example, who have natural advantages, or advantages in the way of location. They would have grown rich without the tariff, for the tariff did not give to them their advantages. Then take the men who are engaged in manufacturing articles protected by patent. They do not need tariff laws. They have a monopoly for seventeen years ; they fix the prices. The tariff injures them because it increases the cost of their plant, material and machinery. Then, take those who pay out about as much as they get. Why, my friends, there are many people engaged in manufacturing who get an increased price, but have to pay it all out in the increased prices of the articles that they must have. I ask them how the tariff affects them in their business ? They say " Your policy will ruin us." How ? What is the necessity of a tariff upon your productions ? How much does it increase the price of the article you make ? They would answer, what the duty was upon a similar foreign article. But how much has it increased the cost of your buildings, machinery and raw material ? How does the law of the United States affect you ? Some men have made the inquiries at my suggestion, and I know of a paper manufacturer in Ohio, who had made a thorough examination, who said that he was willing to take free trade ; if the duty were taken off his plant and chemicals and material, he could afford to have the duty taken off his paper, for then he could sell at a profit in a foreign market. And I know of a man engaged in the manufacture of woolen goods, who stated publicly that he was ready for free trade for the woolen materials he manufactured, if the government would give him free trade in bricks, and stone, and mortar, and machinery, and wool. What was there to say but that what protection gave with one hand it takes away with the other.

I made a proposition myself on the floor of the House of Representatives, and I believe it was concurred in by every revenue

reformer, that if every class of manufacturers of this country would state just what net profit the present tariff system brought to them, we would agree that the reduction in the tariff should not be below that point. They would then have all the protection they needed. But our proposition was never accepted.

It seems to me that you will find from the present condition of manufacturing that the point has been reached which was anticipated by the men who advocated protection to manufacturing in the first instance. It was said to be to promote the development of the infant resources of this country in order that we shall put them upon a firm foundation, and when that time arrived, then the government aid shall be withdrawn. Now, as the object was to give them the home market, the question is, when is the point reached that that object has been accomplished. I claim that it is reached when the manufacturers have over-produced. Over-production, my friends, is only another word for the phrase limited market. No manufacturer over-produces who has a market large enough to consume what he makes. And there is not a manufacturer in the United States who has not, for the last few years, been complaining of over-production. If the mills of the United States should be kept busy for six months, they would supply the whole demand of the United States, and all the foreign demand possible under the present condition of things. How can this industry, in this state of over-production, idle half the time, increase the market, or make any further benefit to the farmer? It is as much as they can do to take care of themselves, and how with the over-productions of the farmer?

Both the farmer and the manufacturer need something else than the home market; both need the foreign market. My friends, it seems to me that the United States stands to the people of the world at this hour just as a country town stands to the farmers who are about it. There are the merchants who have goods to sell. The demand of the town is not sufficient for their consumption. They must seek a market for their wares outside; they must depend upon the farmers as their customers. The farmers have no banks to issue bills, and they have no mines from which to produce coin; but they have butter, eggs, wool, and all the products of the farm, and they take them to the town

to exchange for such goods as they want. But suppose the town council declares that a tax collector shall be stationed at every road, to compel the farmers to pay fifty per cent. of the value of their products before they can sell them there. How many farmers will go there? They will go to the town where they are not obliged to pay and the result will be in a little while that you will see the free town prosperous, the streets lively, and the farmers and business men getting rich, while at the other town you will find goods unsold, the streets deserted, and the merchants bankrupt.

Here is South America, for example. They have not enough gold and silver coin to make their currency stable, but they have wool, ores, leather, tallow, herbs, and a thousand other products indigenous to their soil and climate. We will suppose a vessel with a cargo of these goods to set sail from Rio Janeiro. It touches at New York to see what kind of trade it can make. The master of the vessel is arrested at our port by a custom house officer. He protests that he is trying to make an exchange. No, he must pay a duty of sixty-five per cent. upon his cargo, in this country of liberty. But he has not money enough to pay the duty, and must go elsewhere. The winds carry him to Liverpool, where he meets with no obstruction, and he returns to Rio Janeiro with a cargo of British goods, instead of American goods. (Applause.) In 1884 we sold barely \$2,000,000 worth of our goods to the people of South America; Great Britain nearly \$50,000,000. Let the people of that continent have an opportunity of buying our goods with their's and there seems to be no reason why the greater portion of their trade should not come to us. It is not a mere conviction of mine that this would be the result of reciprocity with other nations, and greater commercial liberty. Let me give you an illustration.

Ten years ago we entered into a treaty with the Hawaiian Islands. That treaty has been in operation for only seven or eight years. It is a treaty of almost absolute reciprocity. And if the terrible disasters that are to follow free trade had come, as the protectionists claim, what little trade had existed between those islands and America would have all disappeared. But what is the astounding result? Has it disappeared? Remember that those islands constitute a group in the Pacific ocean; there are

only sixty thousand people there, and the population has not increased during the last ten years. They did not want much there. Before that treaty went into operation, we sold them in the neighborhood of \$400,000 of our products a year. Year before last we sold them \$4,000,000 worth. The total of our trade with these sixty thousand people was about \$1,000,000 before the treaty, and year before last it was over \$12,000,000.

And whereas, all the products between these two countries were carried in 1880 in British bottoms and under the British flag, ninety-five per cent of all the increased products carried to-day are carried under the American flag, and in American bottoms, and the other five per cent. by vessels that are manned by American sailors. (Applause.)

The ship builders of the Pacific coast have been saved from bankruptcy by the demand for American-built vessels, made so by the treaty. With nearly every other great nation of the world it has increased in due proportion, our great carrying trade has steadily continued to disappear. But in this direction where we had reciprocity and commercial liberty, the carrying trade of Great Britain has been swept from the ocean, and has been superseded by the flag of the United States. (Great Applause.)

My friends, do you not believe that the same results would follow the adoption of treaties of reciprocity with Mexico, South America, and Canada? Is there any reason to doubt that results would follow similar to those that have followed the treaty with the Hawaiian islands? The sale of American goods increased under a treaty of reciprocity with 60,000 people from \$400,000 to \$4,000,000 a year, and what would be the increase if we should adopt the same relations with the 30,000,000 people of South America, and of Mexico, and of Canada? What a golden day it would be for the industries of these United States when these 30,000,000 people could buy this surplus, both of manufacturing and of agriculture! I believe that if we were to extend, as a beginning, the terms of the treaty with the Hawaiian islands, to those countries, that in less than five years we would sell \$100,000,000 worth of our products to the people of those countries.

My friends, I think that what I have said to you to-night has helped you to reach this conclusion; that it is the duty of the great producing powers in this country to look to foreign markets.

You cannot further develop your manufacturing, or your agriculture, for the purpose of supplying the home market ; you must develop them for the markets of the world ; and to do that, I solemnly believe that it is absolutely indispensable to reduce the tariff rates as quickly as possible. I do not see how it can be delayed with any safety to any interest anywhere. You take the home market as it stands, and the manufacturers cannot diminish the cost of production unless they have relief from the law and Congress. We should give them cheaper raw materials, cheaper plant, cheaper machinery. How is manufacturing, and how is farming, to be in any better condition in foreign markets, with the spirit of retaliation aroused. My friends, I would have the eyes of the people turned to the necessities of this foreign market, to keep actively employed the laboring population of this country.

You have been confronted with a question recently, which you must answer. You cannot delay its answer long.

If the labor of this country were contented and satisfied, then any condition of public affairs would remain without disturbance. But it is not satisfied ; it is not contented and the question of the hour is, shall that labor be adequately employed ? You have invited all the labor of the world here, but you close the channels by which it shall go out—by which its products can be disposed of. For by this exchange, work will be given to your people. You have built your mills, and yet you keep them idle—idle because you have refused to induce foreign buyers to come here with goods to make an exchange with you. You have filled your hopper full, and set the wheels and the stones to grinding, but there is no way for the flour to flow out.

You are still in the midst of machinery that ought to be kept busy, which you could keep busy if you would only tell the world to come here to exchange ; and the people are starving, and the laborers are without employment. (Applause.)

I say to the protectionists of this country that the hour has come for you to let the people go. You have fastened them in the meshes of the home market, and they can neither fly nor soar. You have made a land of beauty and of liberty a land of bondage for them. Let them go before the tumult and discontent shall express themselves in revolution. Let them go before the

plagues come, and before the blood of the first-born is painted on the lintel of the door. Let them go in order that our people may meet all the nations of the earth in the friendly embrace of peaceful trade, and that America may enter upon a career of wealth and prosperity which has been so long denied her by unequal and unjust laws.

I thank you, my fellow-citizens. (Great applause.)

OUR DAIRY INTERESTS.

ADDRESS BY HON. EDWARD BURNETT.

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Mr. President, Gentlemen and Fellow-Farmers :

In talking to you about our dairy interests you must listen to me rather from a butter standpoint, because I am a butter dairyman, and shall be inclined to lean a little in that direction, more than from the other side of the question—the milk dairyman.

I wish you also to understand that I talk to you from the standpoint of a Massachusetts farmer, or dairyman, and I may possibly say some things that will sound rather queer to you New Jersey farmers. I would also like you to feel that if I say anything out of the way I shall be glad to be corrected. I would also say that I am used to being interrupted—and this appears to be a body that is fond of making interruptions (laughter). I am glad that you feel that way, and shall be only too glad to be interrupted if there is anything you want to ask me about. I shall be glad to answer you if I can.

In talking to you on the subject of our dairy interests, I wish to place it under three distinct heads :

1st, food ; 2d, dairy stock ; and third, skill, which I divide again into care and skill.

First we will take the subject of feed, and this is the most important of the three, I assure you, though if you take away any one of the three the whole subject falls to the ground—it cannot stand without the whole three successfully.

Give me the best cow in the world, without proper feed, and no one can make butter that is good for anything, and give me the best of feed, with a poor cow, and no one can make butter that is first-class (applause.) This question of feed is one of

the utmost importance to all dairy farmers, and before I go any farther with my remarks, let me make one suggestion, and that is—feed all the clover hay you can get, for there is no feed you can give cows that is better for butter making. I know it is now somewhat out of fashion for farmers to raise clover hay, but let me tell you there is nothing like it for the butter dairyman. There was no need to tell the old dairyman this, for it was a well established rule with him that he could give them nothing better for the purpose, for they fully realized the value of it.

I do not know that it is so much the fault of the farmer that clover hay has grown out of fashion, but I think it is the fault of our more modern machinery, as it has sort of shaken the clover out of our farms. (Laughter.) And there is no longer so much of it grown as formerly, and we do not find it in our barn any more in such abundance as formerly.

In looking into the subject of haying you cannot but notice what a great change has come over it during the last few years, since the advent of new and improved haying machinery. There has been almost a complete revolution in this direction during the last quarter of a century. Our improvements are such that the farmer scarcely touches the hay any more by hand, for from the time it is cut until it is placed in the barn almost the entire labor of handling is performed by machinery. Everything of this kind has been improved until now machinery has crowded out the old fashioned methods. Improvement must take its course.

Down in Chester county, Pennsylvania, where they raise the best clover hay in the world, and where they make the best butter made in this country, they have completely changed their method of gathering the clover. They cut it by machinery, and put it in their barns by machinery, and it is rushed through from the time it is cut until it is housed. Clover must not be handled too much, and you can handle it too much, as you all know. If it is handled too much you lose from twenty to fifty per cent. of its full value, for all the good falls off the stem when it is handled, and you finally have nothing left but the stalks when you get it in the barn. I have seen clover hay that has been wet and shaken up and run over by the tedder, and raked together, and handled, until by the time it was housed there was nothing of any value left. The good parts had all fallen off, and the stalks were

hauled to the barn. No wonder that farmer said he thought he would not raise any more clover. (Laughter.) I would also like to say that there is no crop that will improve our land as clover will, for you all know it contains more nitrogen than any other hay, and then again, it is easily cured, though the great fault with many farmers is that they let it go too long before cutting it. This is a great mistake, as you lose the best part of the hay, and the stems become hard and dry, so that cattle do not care to eat them. Clover, to make the best of hay, should be cut just at the time it comes into full bloom. I also appreciate the difficulty of raising clover, and know how hard it is to get a crop of it, or even to get it started, in a dry season. In Massachusetts we have had a series of drouths the last four or five years, though I am glad to say we had better luck last year than the years preceding, and we were able to get a tolerably fair crop. It is also almost impossible to raise a crop of it except on very highly cultivated land, as it will never amount to anything on poor land. It will not grow without it has a rich soil to make it grow, and to be successful in raising it the farm must be in a high state of cultivation.

You can feed this clover as you think best, but those who are well posted on this question of feeding—those who feed for these butter tests we hear of—and I look upon these men as the most successful feeders in the world, for they are the most careful of men in everything that pertains to the question of caring for their cows. They are like horse jockeys. I heard a story the other day about Norton, of Canada, who fed Mary Ann, of Saint Lambert. It is said that he exercises so much care in her keeping that he even takes her temperature every three hours (laughter), and that he sleeps with her nights to enable him to do this (laughter). It was also said that if Norton and Mary Ann were put up for sale at auction Norton would bring the most money (laughter.) I don't doubt that such might be the case, for he is a most successful feeder.

The best feeders cut their hay very fine and make the food as bulky as possible, mixing with it the rich concentrated food. Pea meal is used, or pulped oats, or both, mixed with this cut hay, this clover hay, cut fine. The object is to make the food as bulky as possible, because cows have really fine stomachs. She

must not have a condensed food, but a bulky food, and in this bulky food they mix as much concentrated food as possible.

If you can cut the hay it will be an advantage to you, though I understand, of course, that with many small farmers this will not be practicable and in such cases of course it must be omitted.

Now, when you come to the subject of meal—well, in my opinion, there is nothing like the old-fashioned corn-cob meal, for it fills all the requirements, and there is nothing like it to make good butter. I know many people claim it will not give butter the fine color and quality that fine corn meal will, but I think there is nothing like this corn-cob meal. Supplementing this corn cob meal with shorts, to make it more bulky, or with crushed oats, and I doubt if it is as good as the cob meal itself.

I find in my dairy, and in the dairies of my neighbors, where cob meal is used—and pretty plentifully, too—that there is nothing like it for good butter. I am a good feeder myself, and believe in feeding cows about as much as they can stand, not enough to make the cows gluttons, but what they can stand well. It is a mistaken idea with many farmers that it is only those fancy farmers, so-called, who can afford to feed grain. I feed my cows for about ten months out of the twelve, and pretty much all of this feed in the way of grain is given in the shape of corn-cob meal. I feed pretty regularly during almost the whole year, except during the months of June and July, when they have good pasture, but the moment your grass gets short or begins to dry up you must supplement your pasture by giving them grain of some kind. I feed in my own herd of thoroughbreds—I am a Jersey breeder, by the way—I feed all the way from four to six quarts of cob meal per day to each cow. I supplement this grain by feeding the very best of hay, and I would like to say that if you have not a good quality of hay, corn fodder will make a better quality of butter than hay when it is over-ripe.

In making fine butter, gentlemen, it is not one little thing that tells, but a whole lot of things, little and big, strung together. (Applause.) I know one man who makes the very best of butter, who is so particular that he will not even have a big lot of corn ground at a time—he is so particular about his meal that he sends it to mill three times a week—every other day. He thinks

the meal, after being ground a few days, is not so good. This gentleman, a Mr. Williams, sends his grist to mill regularly every other day, because he is such a strong believer in the virtue of fresh meal. He often has Mrs. Williams send for meal for "Johnny Cake." (Laughter.) She sends to the store for it, and what is the result? When it is not just right she would say, "George, are you going to the mill for the cows to-morrow?" He replies, "Yes," and then she will say, "Well, if you are going to mill bring me a little fresh ground meal for "Johnny Cake." Your wives all know that freshly ground meal makes a much better Johnny Cake. It is just so with your dairy, and it is such little points that tell.

I suppose there are many of you here who would like to know my experience with ensilage. I have had but little experience, and can, therefore, say but little about it. I cannot tell you much about this, but I have been, for the last few years, looking into the value of corn stalks, and I am convinced, thoroughly convinced, of their value as a fodder for cows. I think corn fodder a very good food for dairy cows. I believe it of such value to the farmer that when properly fed if you raise a crop of corn you get enough off your land to have your crop of corn clear, after the stalks are fed. That is, the grain is left as a profit to you, after you have fed the fodder, for I believe the value of the fodder is enough as feed to pay for the cost of raising the crop; that is my experience and I have proved it to my own satisfaction, conclusively.

I would rather refer you to my yearlings and two-year olds for the most conclusive proofs of the value of corn stalks as a fodder, for they get but little else. I feed but little grain to these young cows, and they are the best evidence of the value of corn fodder that I can give you. During the last few years, while these silos have been receiving so much attention, I have given this question of corn fodder a thorough investigation, and I am more than ever convinced of its value as a food.

The dairy farmer must expect to feed his cows well if he would have the best of results. I know there are farmers who do not think it can be made to pay, except those who are fancy farmers, but you cannot make good butter without you feed well. If you do not feed grain what is your product? Ask any one who uses

butter, and he will express his opinion, for the fact is plain to all, that grain butter is better than the other. Besides the hay and fodder I feed, and the grain, I raise large quantities of roots which I feed. I feed five thousand bushels of roots a year. I manure heavily and raise very large crops. I have followed this plan for fifteen years, and would not like to dispense with these, for they are an important factor on my farm. I feed them more as a tonic than anything else, for I must, as a stock raiser, look not only after the product from my cows, but I must also look after the progeny as well. I am talking now about dairy farming as a matter of business. If I was asked to go and start a dairy for cream and butter only I would still want to feed the very best, and to the very best advantage, with the idea of obtaining the very best prices obtainable. This is the standpoint I am talking from now, that of dairy farming as a business.

Mr. Comlinson: In regard to feeding meal, I think Indian meal makes the best butter, though I think the cows have a tendency to go too much to flesh. What is your idea about it?

Mr. Burnett: That is very true. Are you feeding cob meal, or all Indian meal?

Mr. Comlinson: I feed Indian meal.

Mr. Burnett: You should mix with it some bran or crushed oats.

You all know that the shorts of to-day and the shorts of twenty-five or thirty years ago are no more alike than chalk is like cheese; they have no vitality as made under the present process of grinding the wheat. To-day you may feed shorts in any quantity, and you will not improve the quality of your butter one particle, nor will you improve the quality of your milk, because there is nothing left in the shorts—all the vitality is crushed or rolled out of them. In fact, the cows fed with it are not helped a particle, and the quality of your butter will retrograde—will go down hill, though it might perhaps increase the quantity of the milk slightly. What I mean is, that you don't increase the value of your milk one particle in butter fats, or in the quantity of butter produced, even though you feed them shorts by the bushel. They are a very poor feed for the butter maker. Crushed oats are far better. Cob meal is the best

of all—in fact, I am a little bit of a crank on the cob meal question (Laughter).

I would, therefore, suggest that you supplement your clear Indian meal with crushed oats, half and half.

Mr. Dodd: Do you feed your cob meal raw or steamed?

Mr. Burnett: I feed it raw. I have a large farm, and do a very large business besides. I have about one hundred thoroughbreds, and I take the milk from my neighbors around me. I get all the milk from five or six hundred cows a day. These cows produce about four tons of milk a day. My farm has to be run by machinery—by the bell and whistle system, I might say. My business is more of a mercantile business than it is of farming, for I have a large creamery to attend to on my farm, in addition to my other interests.

At half past five in the morning every man must be in his place in the stable, for that is the time we begin our milking. The herdsman has already given the cows a good foddering of hay. At a quarter past six the milking is done, and then the men go to breakfast, and the herdsman cleans out the stall—he takes his breakfast at whatever time it suits him, for he has his duties to attend to, and goes when he best can. The herdsman then gives the stalls a good cleaning, brushing them out thoroughly, and then gives the cows their grain, each animal getting from two to four quarts of cob meal, those near calving and those cows that are dry getting little or no grain. After he has his breakfast the cows are watered, and they are then given a good quantity of corn stalks.

In the afternoon we begin feeding about half past two, rarely getting two meals, but quite a number of courses—that is my plan. They don't get through eating their different courses until half past nine or ten in the morning, and then they begin again about half past two in the afternoon on their other feed. Then we give them roots and grain again, and then comes hay, and then we milk them at five. We milk at exactly the same time night and morning, dividing the time into two periods of about equal length. After they are milked they get another foddering of hay. I am an old-fashioned feeder, as you will observe, and divide my feed into two feeds a day. They are all allowed to run out in the afternoon, being turned out of the stables then.

Here let me say one word of the utmost importance to any one who would succeed as a dairyman, and that is the giving of water with the chill taken off of it in winter. Don't give them cold water to drink—water cold enough to chill them, for it is the very worst thing you can do, and there is nothing that will reduce their flow of milk more quickly. Cows that have been drinking cold water will not give down their milk. The water should be warmed for them before they are allowed to drink it, and I consider an arrangement for warming the water the best investment a farmer can make, as I know it will help his flow of milk, and increase it from ten to twenty-five per cent. It is a tremendous statement, but it is a true one. If you water your cows in all sorts of weather, with water such as I have seen given to cows—the farmer going out with an axe to break the ice on the trough, so the cows can drink—if you do this you must expect, when you milk the cows, to find that they won't "give down" their milk. It is no wonder. Cows come out of their warm stable into the chilly or cold air, they are very thirsty, and they go to the trough and look at the icy cold water, tasting it and finding it freezing cold. But she is thirsty and must drink and she begins to drink. As she drinks you see her back coming up like this (illustrating), until it assumes this shape (laughter), like the new quarter of the moon (laughter), and she begins to shiver and shake. What is the result? It interferes with her supply of milk. That night when you milk her it has decreased her flow of milk fully twenty-five per cent; there is no question about it. It is only natural that such should be the case, when we come to think what a wonderful contrivance the cow is, with the wonderful apparatus which makes the milk we draw from her udder.

I am a warm water disciple. You have heard of the cold water disciples. (Laughter.)

In this connection I want to speak of a most ingenious contrivance now in use for heating the water in the trough; it consists of a pipe running through the water trough, in which you can build a fire, and warm the water sufficiently for the cows to drink, by the use of only a handful of chips.

Mr. Lippincott: How often should a cow be watered in twenty-four hours?

Mr. Burnett: Twice.

Mr. Borton: Is a temperature of fifty degrees too cold?

Mr. Burnett: Yes, I think so. The water I give my cows has a temperature of from eighty to ninety-five degrees in winter.

Mr. Denise: Are they not likely to take cold after drinking such warm water, or if they are given such warm water?

Mr. Burnett: I don't think they are. I don't believe there is hardly a dairyman who supplies me with milk but who heats his water before allowing his cows to drink it, and I have never heard of anything of the kind happening. It does not matter how you get the water warm, so you give it warm, or with the chill taken off of it.

In speaking of stock, I define a dairy cow, whether Jersey, Guernsey, Holstein, Shorthorn, or Devon, or breed of any sort, as the typical dairy cow, with all the points of a good milker and butter maker, and if she has these points she is the one to hold to. If you find a man has ten or twenty or thirty first class dairy cows you will find that they are all the same in this. You can go out and buy them—buy any kind of breed, and you will always find the typical dairy cow the same. She has a fine head, a long face, good eye, clean neck, thin over the withers, going back like a letter "V," broad across the hips, and she has what I tell our farmers many Jersey cows have not got, and which we must have, if we would have good dairy cows—guts and a good constitution. (Laughter). It is plain language, but you must have them both if you expect to have a good dairy cow; otherwise she is a failure.

Mr. Lippincott: I suppose the arrangement for warming the water is something like the hot scalding troughs used by our farmers in New Jersey; am I right?

Mr. Burnett: It is an arrangement running through the trough, by which the water may be heated; a fire can be built in it with a handful of chips.

Mr. Lippincott: How about the escutcheon marks?

Mr. Burnett: I have bought stock for gentlemen in this and other States—over fifty thousand dollars worth—and I never bought one on an escutcheon mark yet (laughter). I never understood it, and I have never seen a man who did.

The dairy cow is one of the most delicate organizations in the

animal kingdom. She is an animal who takes her food into her body, assimilates it and distributes it through the most delicate working machinery of any animal we have, until, finally, it comes out in that great big milk vein on the belly, and finally reaches the udder, and down through this fine great big swinging udder, through four well placed teats, and into the milk pail. This is the style of dairy cow to breed (applause.) She is an animal of such delicate organization that any little thing disturbs her. You all know that if in driving her along the road a strange dog barks at her, or if you meet a neighbor driving along who has his dog with him—all these will disturb the cow, and if she is disturbed she will not give you her full flow of milk, because of this disturbance—because that delicate organization has been upset.

It does not make so much difference about the kind of dairy stock you have, but if you don't look after that dairy stock, and take care of it, and if you don't feed it properly, it will not be of any particular value to you or anybody else, as dairy stock (applause).

You take a beef animal and you will find, in comparison with the dairy stock, that they are no more alike than a common draft horse is like the famous English thoroughbred racing horse. You will find an animal that is, under all conditions—come what may—that is always chewing its cud. No matter what happens to such an animal—if it stands under a tree struck by lightning even, it would still go on calmly chewing its cud (laughter.) Such is the temperament of the one, and such is the temperament of the other—the one finely and delicately organized, and the other not disturbed by anything.

Now, gentlemen, I don't want to devote too much time to cattle, but I would like to say just this of every domestic animal, whether sheep or dog, or no matter what, they all require plenty of care. Those men who look after their cattle best—who look after them personally—those are always the men who obtain the best results.

I can give you a forcible illustration of this. As many of you may know, I have frequently been engaged in buying cattle for others, from over the water. I have been engaged by different gentlemen to buy herds for them, and I have found that it does

not make so much difference what blood they start with as it does about the care they get afterwards (laughter). Whether they have pedigrees as long as your arm, and bring prices away up among the thousands, if they have first-class individual merit, and receive the proper care, they will form a good herd, and the man who has them will succeed with them. If they do not receive the proper care they are a failure, and deservedly so, I think.

I can tell you of two herds I once purchased for a gentleman—one within five miles of my own farm. When I bought this herd for him I was limited as to price, and told not to go beyond it. I sent one of my old herdsman to that place, and that same herd has become one of the best herds in the State of Massachusetts to-day. He had a moderately good herd to start with and kept on improving because it got the best of care.

I bought another herd for a gentleman—a New Yorker—who sent them to a farm in New Jersey. Now that herd did not get the care it needed, and it all went to pieces. It cost far more than the other, as I was not limited as to price, but it amounts to nothing now. I paid as high as fifteen hundred and two thousand dollars apiece for some of the animals in that herd. Some of them died for want of proper care, and some of them you could buy for less than ten cents on the dollar. Why? Simply because they were shoved and changed about until they lost their identity; that is the reason. That herd to start with was as fine as any herd in the State. I cannot impress this on your minds too strongly, for without care dairy cows will never be a success.

About care and skill, that extends through the whole system. It comes back to the feed and it comes back to the cattle. Without them the structure will fall to the ground—it cannot stand; it must surely fall.

You take, for instance, the farmer who is most successful in his work, and you will find him looking after his business himself; you find him looking after his cows, his sheep, all his animals, his farm, his crops, his wife and his children. (Laughter.)

One of the most important things in the successful care of cattle—of dairy cows especially—one of the most important things is the regularity of feeding and milking the cows, and regularity in churning, and in the last connection a most important thing is

the temperature of the cream when churning. I think a refrigeration in Summer is just as important as heating in Winter, and no man can make good butter all the year round if he does not have a cold room for his cream in Summer, or a supply of ice, or a spring, or whatever arrangement he may have for cooling the temperature of his cream. He cannot make decent butter the year round without he has one of these. It is the most important point that has been decided in the last ten years, and it is a point which must be born in mind by Eastern farmers if we would compete in the markets with our rivals in butter making.

From the West comes car load after car load of good butter, coming to your markets to compete with your butter product.

The Hon. H. D. Sherman, of Iowa, has for several years been looking into this subject—in fact, he has given the subject some of the best years of his life. He has for the last twenty-five years been devoted to the work, and this man has talked clover, and has talked creamery, and the methods of building creameries, and the use of ice and refrigerators in summer, until to-day the Western butter that used to go to Chicago in fifteen to one hundred pound kegs, and was sold at the bottom price, now brings from thirty-five to forty cents per pound in New York markets. It comes to New York—right into our home markets—and sells by the car load at the very top of the market. The time is certainly coming when something must be done, and in Massachusetts we are establishing creameries, and these have increased in our State during the last two years fully two hundred fold, and we are getting good results from them.

They simply divert the milk from the Boston market into other channels, and we are able to send it in the shape of dairy products to points where there is more demand, and also enable the farmer to shut off a part of the supply from Boston and those places where the market is glutted with milk. Of course you cannot entirely shut off the supply from a big city. I think you will realize this when you consider what a factor the railroads are in placing everybody on a level. If every farmer within twenty miles of New York were to decide not to send milk to New York it would not take more than one week before milk would be coming there from points fully five hundred miles distant. It would come in flying, too. You can in a measure shut it off by making

the quality of the milk such that it will pay to turn it into butter or cheese. .

Many people do not realize the difference in the value of milk. I have had much experience in this direction, in buying milk for my dairy and weighing every cow's milk in my own herd night and morning. I have in my herd probably half a dozen cows giving seven thousand pounds of milk in a year, the average being about ten pounds per milking. My poorest cows give me five thousand pounds per annum. What are the results? It takes sixteen pounds of milk to make a pound of butter, when the milk comes from my cows, while the milk I buy from my neighbors gives but one pound of butter for twenty-two pounds of milk. Look at the relative value of the two; look at the relative value in dollars and cents. Take five thousand pounds of milk per cow, and if it takes twenty-two pounds to make a pound of butter you get two hundred and twenty-seven pounds, and if it only takes sixteen pounds of milk to a pound of butter you get three hundred and twelve pounds of butter from the same weight of milk, or a difference of eighty-five pounds in favor of the best cow's milk.

With butter at only twenty-five cents per pound you have \$21.25 in favor of the better cow. If you have twenty or thirty or fifty or one hundred cows—look at the difference in your income from your herd. It don't cost any more to feed one cow than the other—the one will, dollar for dollar, cost just as much in feed at the end of the year as the other, while one will have paid you over twenty dollars more for her care and keep than the other, and this is quite a large item when you consider your whole herd. If she is a first class dairy cow she gives you upwards of seven thousand pounds of milk in a year, and this makes a still greater difference in favor of the good cow; from the one we have four hundred and thirty-eight pounds of butter, and from the other we get but three hundred and eighteen pounds, counting on the basis of sixteen pounds of milk to one pound of butter, in the one case, and twenty-two pounds in the other. In this case we have a difference of one hundred and twenty pounds in favor of the better grade of cow; reckon this at thirty cents, or even at twenty-five cents a pound, and see the difference in profit in each cow, and look at this in a herd of twenty-five or thirty cows. I think you will agree with me that it pays to keep the best cows, every time.

The figures I have given you are not made on any supposition, nor are they guessed at ; this is a part of my actual experience, and the figures are taken from my books at home—figures that I can vouch for from my own personal experience. Neither is this an occasional occurrence—it is my daily experience—a daily occurrence. I figure carefully the number of pounds of milk my cows yield, and then I also figure carefully the number of pounds of their milk required to make a pound of butter, and in this way I am able to say exactly what my cows are worth to me.

Of course the most valuable cow, as you will all agree with me, is that cow from which you can obtain the most butter for a given quantity of feed. There is no question about this ; it is a self-evident fact.

In this connection I want to call your attention to another fact that, perhaps, many of you are acquainted with ; that within the last ten years our best physicians have been prescribing more and more milk for their patients. There has been an immense increase in the consumption of milk in this direction, as physicians have become more and more decided in their ideas as to the value of milk for the sick. This is accounted for by the fact that milk has been discovered to be, in itself, a perfect food, and it is for this reason that it is being prescribed more and more, for almost every disease, as a part of the diet.

People are willing to pay almost any price for milk for this purpose, if they know it can be relied upon.

Two large English milk companies—the London Dairy and Express Company and the Aylesbury Company, with both of which I am familiar, buy their milk by the quality. They are far more particular than any Official Inspectors we have in this country—far more particular, at least, than any Inspectors we have connected with the milk department in Boston, or in Massachusetts. They bind the farmers who supply them with contracts that are as hard as iron. He is obliged to comply with their conditions in every respect. He is bound, within five minutes after the milk is drawn from the cow, to cool it.

They have a cooler which is very useful for this purpose ; it is composed of a series of tubes arranged side by side, and connected at the ends ; over these tubes, side by side, the milk is allowed to run, and is cooled by the time it runs down into the pail.

These tubes are three-quarters of an inch in diameter, or thereabouts; they are filled with cold water. The trough in which the milk is poured is perforated on the bottom, and as the milk trickles down over these pipes it is cooled to the required temperature. The arrangement looks very much like an old-fashioned corrugated zinc washboard. Every cow's milk, within five minutes of its being drawn from her, must be poured over this arrangement and cooled, and this is a rule there must be no deviation from.

The milk starts up here at the top (indicating) at a temperature of ninety-five degrees—blood heat is about ninety-eight, you know—and as it runs down here (indicating) it drops into the pail below here (indicating) with a temperature of fifty-three or fifty-four degrees, and it is all done in about a minute, or in a minute and a half, at the outside. The animal heat is taken out instantly, and the result is that in all weathers that milk will keep sweet, under ordinary conditions of handling, from three to four days.

Before this arrangement went into vogue the Aylesbury Company, out of twenty thousand quarts of milk handled, have lost as high as five thousand quarts of milk in a day, in foggy or muggy weather. From this you will note what an important matter this is to them, and it may be readily understood why they are so binding in their conditions placed upon the farmers supplying them with milk. With this system they never lose a single quart from the causes which formerly made them so much loss. Their Secretary has assured me that this is the case.

An arrangement of this kind is of great value to the milk dairyman.

Mr. Forsythe: What is the price of one of those coolers you have referred to, with those pipes side by side?

Mr. Burnett: About \$30. They are very expensive, and this is the unfortunate part of it, that they cost too much.

I have been experimenting carefully in this direction, with a view of inventing a cooler that could be used as a substitute, but I have been very much disappointed, as I find that the cooler I had hoped to be able to make and put on the market for about \$10 cost me from \$15 to \$20, and my experiments in this direction have not been brought to the successful termination I had hoped. I am still tugging away at it, however, and hope to be more successful in the future.

My idea was to make a single coil of pipes over which the milk could be allowed to run, and perform the same functions as the more expensive arrangement of pipes in use in the present cooler. I thought I could do away with the many joints at the ends of the pipes.

It is a matter of very great importance to the milk dairyman, and I think such a cooler would be found of inestimable value to all those producing milk for market.

Mr. Lippincott: What metal do you use for these coolers?

Mr. Burnett: Copper.

Gentlemen, I have talked to you for an hour, and it is a very big subject. (Laughter).

I have not said very much to you on certain parts of my subject, but I shall be delighted to have you ask any questions you wish, and, at the same time, I want to say that I am very much obliged to you for your kind attention. It is a pleasure to talk to such an audience. I am used to being interrupted in my talks, and I rather like it. (Laughter).

Mr. Forsythe: I would like to ask whether you have any particular method of shipping milk long distances. Do you put any materials in the milk to keep it, or do you know anything about these recipes for making the milk keep when shipped?

Mr. Burnett: Yes, sir; I had a very funny experience about one of these so-called milk preservatives.

Governor Rice, of Massachusetts, was very much interested in one of these milk preserving processes, and he managed to interest my father in it, and between them they succeeded in getting me to test it, and we made all sorts of experiments, on meat and butter, with this antiseptic, and these experiments were very successful.

I am not sure but I think the Professor who originated this method came from New Jersey (laughter), and when he came there to us we thought it a most wonderful discovery and we tried all sorts of experiments with it, and very successfully, too. I prepare for the markets a good deal of cream in pint jars, and this I sell to a great many Boston families. It is a cream you seldom see in the cities—it is more like the old fashioned cream, thick and rich—so thick that you could stand a spoon in the middle of the jar, and it would stand alone in cold weather. It is a thick

and rich cream, especially prepared for my customers. This cream is also in great demand among people who travel to Europe and other points by steamer, and they take a supply of it with them. When this process came out I was delighted. I ship large quantities of this prepared cream, and I said, with this process my fortune is made, (laughter). But it was not as satisfactory as I had supposed, for I found that we sometimes got a little too much of it in the cream, and there was a bitter taste resulting from its use.

All of a sudden I found I had run out of the antiseptic, and, by the way, the Professor has assured me that I was always to be kept supplied whether any one else got any or not. (Laughter.) Well, at any rate, I found I was out of it. I had developed his experiments for him, and made it successful, and he would do anything for me, of course. (Laughter.) I tried to hunt him up to get an additional supply of this stuff, for I had a large order to fill. He was not in Boston, and after inquiring I found he had left town and gone to Washington. I was very much worried, and telegraphed him, "If possible send to-night by express enough antiseptic to put up twenty-five pints of cream to fill an order for Europe." He telegraphed back, "Use salt and borax." (Laughter and applause.) I had been in perfect despair, because I had this order to fill within twenty-four hours, and thought it must be mixed with this antiseptic to make it keep, and he telegraphed me to use salt and borax (laughter) and ever since that day I have used salt and borax. (Laughter.) The company failed afterwards (laughter), but I had never taken any stock in it, and lost nothing. I was very cautious in my report, and when a friend asked me about it I advised him not to take any stock in it, for I thought there was altogether too much underhand work going on in the company. I didn't like the way the Professor acted, and I did not trust him. I found afterwards that there was something else in the mixture besides salt and borax—there was salicylic acid. Salt and borax will do the work very well and very thoroughly but it should only be used in very minute quantities, and I think it is likely that physicians generally would object to this use of the salt and borax in cream or milk intended for the consumption of the sick. If you want to use the salt and borax only to keep cream and milk a certain

length of time it will do the work, but it is questionable, as I have said, whether the physician would not object to having it put in the cream or milk he prescribes for his patients, as it may be injurious. I have always told my customers, though, that I mixed this salt and borax with my cream when I prepared the cream for Europe.

Mr. Deicks : Do you approve of cutting corn stalks fine ?

Mr. Burnett : Yes.

Mr. Deicks : I will tell you why I ask. We used to cut it fine, and we found the cows didn't like it at all. We concluded it would not pay to do it. We found we had just as much left when we cut it fine as when we fed it without cutting it up, and we concluded to stop it, as it was no advantage to us to do so, apparently. That is why I asked the question. I would like to hear your experience in this way of feeding.

Mr. Burnett : I have a shredder which I use, and which I find to be a very good thing, although it is very slow in its operations. If you have the extra labor, and plenty of time, you will find it a good thing, and that it pays. It cuts the stalks up into shreds, about like the stems of hay. I cut my corn stalks for my young stock but I feed them without cutting to the others, and then take the butts and throw them in the yard, after the cows have picked them over.

Mr. Lippincott : What proportion will they eat when shredded ?

Mr. Burnett : All of them. I prepare it for them, and induce them to eat it all by putting grain with the shredded stalks. I prepare it for them, mixing it carefully, and I have no trouble about their leaving it.

Mr. Haines : Do you find any demand for unsalted butter ?

Mr. Burnett : Yes, I do, among some of my customers.

Mr. Haines : Is the demand increasing among the best class of your customers whom you supply regularly ?

Mr. Burnett : I find that the market in this unsalted butter has been very much changed in the last few years, and can give you an instance of three of our best hotels in Boston, where, fifteen or twenty years ago, they used only firkin butter, and where they now want only fresh lump butter. I find, though, that there are very few people in Boston who want it as fresh as you get it abroad, almost absolutely free from salt. I mix

about three ounces of salt to ten pounds of butter, or a little over a quarter of an ounce to a pound of butter. I make from one hundred to two hundred pounds of butter daily.

Mr. Collins: What is your experience in regard to salting in the shape of brine?

Mr. Burnett: I make my butter in a barrel churn, holding from seventy-five to one hundred pounds of butter. It takes about forty minutes in summer at the right temperature.

Mr. Haines: What temperature should the cream be?

Mr. Burnett: I make it a rule to have the cream at a temperature of fifty-six degrees in summer, and sixty-two degrees in winter. I think this of the utmost importance, and believe a thermometer of just as much importance in the dairy as the milking pail—every bit as important. I know it is contended that the old fashioned way of sticking the finger into the cream serves the same purpose, but these old fashioned dairy women, who could put their fingers in the cream and tell you by the feeling of it whether it was the right temperature or not—women of such fine and sensitive touch are now few and far between. (Laughter.) Of course every man thinks, though, that he has such a woman in his wife, but nineteen out of twenty are mistaken.

You want a low temperature in summer and a high temperature in winter, and if these are not secured you cannot be successful butter makers.

My butter room is kept at about the same temperature summer and winter—in the summer by ventilators which open directly from the ice house to the room. In this ice house are some twenty-five tons of ice, and by this means I am able to keep the temperature of the butter room within two or three degrees of sixty.

In about forty minutes after we begin churning the butter comes in little particles, or little globules about the size of wheat, when the buttermilk is drawn off very carefully and allowed to drain for ten or fifteen minutes. My man loses no time while this is standing, for he has enough other work on hand, getting ready for his day's work. My man whom I have to make my butter attends to nothing else. Then we give the butter about three washings with brine—sometimes only two washings, and sometimes four, for we always want the brine to fall away from

the butter clear—without any milk. Three washings will generally accomplish this result. Then it is worked in the churn, where it is brought together into one lump or mass. Then it is taken out and placed on a tray made of wood, and this is placed on the table. I have a butter worker that is run by hand, the Walker patent, though I think it is called the Eureka by some people. The butter is worked once or twice, and the moisture is sopped up with sponges, then it is worked into lumps of twenty pounds; in these twenty pound lumps we put six ounces of salt. My old custom was to place it in ten pound lumps and use three ounces of salt, but I now put it in twenty pound lumps, and with this we mix six ounces of salt. This is rolled up and kneaded as you would knead dough, perhaps for two or three minutes. Then it is rolled once or twice, and then put back in the tray, and allowed to stand for three or four hours. I should do this at once, but I use a rather coarse salt, because I find it is very pure and very strong. It takes three or four hours for this salt to assimilate and melt—to become thoroughly mixed with the butter. After the butter has been salted, it is what we call "sick." It is loose grained, and does not recover its proper health for three or four hours. It takes it all the way from twelve to twenty-four hours to acquire its perfect grain.

At the end of three or four hours the butter has absorbed the salt, and it is then ready to be worked over again and put into moulds.

For moulding the butter I use the Rapp (?) butter print, made in West Chester, Pennsylvania. We lump it into half pound prints, and send in boxes to families and hotels in Boston.

This is my simple process of butter making, as I have tried to explain it to you.

Mr. Borton: What percentage of the salt does the butter extract from the brine?

Mr. Burnett: Scarcely any. Butter, in the globular form, is a repellant. It will absorb a little or no salt in the globular form. I find, by actual experiment—I put this to you from actual experience—that when this butter is in the gobular form, with globules about the size of a grain of plump wheat or rye—I find it is just as fresh at the end of two or three or four days as it was the hour it was put there.

Mr. Lippincott: What kind of a creamer do you use?

Mr. Burnett: I use the centrifugal machine.

Mr. Betts: Do you use the separator?

Mr. Burnett: Yes, I use the centrifugal machine. I was the first to use this machine in this country, in the winter of 1879, and I have been using it ever since, and use it to the present day. It is the most satisfactory machine I can use in gathering the cream I send to market. I began in 1879 to develop this machine. It is like a large basket. The size is twelve inches high and twenty-six inches in diameter, with an opening about fifteen inches in diameter on the top. The cream is taken off by a process different from that used in any other machine in this country, while the machine revolves at the rate of about eighteen hundred revolutions a minute. On a stationary pivot is fastened a curved pipe made of solid brass, with a steel blade fastened at the end. This tube fits very nicely; it is a most beautiful piece of machinery, I assure you; it goes in under the top of the basket which extends over only about six inches on the outside, leaving an opening of about fifteen inches. It goes in there and cuts off the cream as the machine revolves. You would be astonished to see how quickly this is done.

Mr. Betts: You think by the use of this machine you get all the cream, I suppose—do you or not?

Mr. Burnett: I don't think there is any question about that; I feel sure we get every particle of it with this machine.

Mr. Betts: By getting all the cream this way are you able to make a finer quality of butter? That seems to be a matter of importance.

Mr. Burnett: That is a question I should not care to decide. I think myself you do not. The value of my machine to me is in the fact that it enables me to make in summer a standard cream, and you all know how important this is. With the deep pails I can make a standard butter, and unless I wanted to make a very large amount of butter I would not buy a centrifugal machine. I think the other method would be more satisfactory where you do not have such a large butter product, but I want my centrifugal machine because I think I can furnish a standard cream.

REMARKS
ON THE
CONTAGIOUS DISEASES OF ANIMALS

BY EZRA M. HUNT, M. D., SECRETARY STATE BOARD OF HEALTH.

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There could have been no better introduction to the subject that has been assigned to me than this we have just listened to, in the excellent address by Mr. Burnett.

His address has been a most able and clear one, and in his treatment of the subject of the care and keeping of our cattle, he has dwelt more fully than I could hope to. But if we have to contend with contagious diseases in animals, all our care, except as a preventive, is unavailing. When we have exercised all our care with these animals, and a contagious disease comes in among them and destroys them, it is discouraging to us all. If there is anything we can do to prevent the inroads of disease—if there are any methods that can be employed, they are certainly worthy of our attention.

I have often felt the deepest concern when I have had occasion to go into a stable where five or six fine horses were suffering from the glanders, or in the dairy where the best of dairy cows are suffering from some contagious disease.

If we feel sympathy for the “animalities” of life as well as the humanities of life, we can not but wish to see these animals protected from the ravages of such diseases.

In this connection I am glad to say that great improvement has been shown in the care of our domestic animals, particularly in the care exercised to prevent the spread of these diseases. But it is of little use for the people of New Jersey alone to have this

care ; the need is territorial, and care must be exercised by our neighboring States as well.

We are not situated as are the people of Massachusetts, but we are so situated between the two great markets of the country that cattle are constantly being shipped across the State, bringing with them diseases that the farmers of New Jersey might otherwise be able to keep out of the State. Our State is an exceptional one in its location, as there is no other State in these United States so favorably situated for the spread of contagious diseases within her borders. In speaking of animals now I refer only to those used for food, and make no allusion to the many thousands of other animals passing through our State.

If you number the animals in the State you will find that the thirty-five thousand farms average about sixteen animals each, and it is therefore little wonder that we should feel such an interest in this question of the ravages of contagious diseases. The principal cause of all this is that there are such large numbers of animals passing through our State—more than through any other State in the Union. The interests of our farmers are involved in this—heavily involved, on account of our being more exposed, and on account of these diseases being brought to us by this exposure.

Then, again, there is the question of our health, and it becomes to us a question of great importance, for not only do the animals suffer from these diseases but we, ourselves, are also suffering, and have been suffering more during the last five years, because of the poor meats and poor milk and butter supplies we consume. From these causes we suffer more than ever before. We must fully realize this fact, for to this is much of our sickness directly due. Of this there can be no doubt.

Take the disease tuberculosis ; there are many facts put forth in connection with this which are very significant—many of them put forth in the past year. We have recently had many cases of sickness in children, resulting in death, many of them attributable to this influence of tuberculosis. These facts seem to be very clearly demonstrated by the best medical men of our time. Scarlet fever has also been the cause of much of this trouble, and has doubtless been spread in ways that are not clear to us. Many measures have been taken to prevent the spread of these

contagious diseases, but during the past year no more important investigation has been entered into than that of the spread of scarlet fever. It is now claimed to be originally a bovine disease and to be communicated directly from the cow.

Thus it is with some other diseases which we are working on, and which we hope to be able to eradicate, or to prevent their spread and inroads. Fortunately many of these diseases we do not have to fear, and I will only speak to you of those we have.

I will not occupy your time long, and will only refer to these as matters that we all, as thinking men, need to think of seriously.

We have to ask, what have these diseases in common? They have one thing in common—communicability. But they differ in mode and degree of communicability.

It was my duty this last summer to be summoned to look into the outbreak of Texas fever in this State. There were some thirty or forty cases of this disease we were asked to investigate. It was a great relief to me to be able to assure the people that there was no danger of the spread, as the disease had not communicability—was not contagious in the ordinary sense of the term. The only risk was from the droppings of the animals, should other cattle be turned in where these droppings were; this was a serious risk. This was the cause of the spread of the disease. The animals in the next field did not catch the disease, and were not disturbed. It is important to remember that the disease, like typhoid fever, is communicable from the excreta.

The disease *tuberculosis* has been found in several Jersey herds; it is said that it does not come so readily into common herds, for, as it is said in England, with the King's Evil, none but aristocratic families can easily catch it. So it is with this disease—it does not appear to attack the common cattle so much.

It may be brought on by exposure; that is, it may come through the air to them, and the spread of the disease may be prevented by exercising proper care. With some of these diseases it seems impossible to prevent their spread under present provisions, though we are constantly trying to devise remedies and preventives. In many cases we receive valuable suggestions from farmers themselves. It is also possible at times to prevent

the spread of the disease by proper isolation—not taking the sick ones out and placing them somewhere else, but leaving the sick where they are and removing the well animals to another location. It is also possible at times to isolate them to such good advantage that the spread of the diseases are stopped, where it is known that some of them have been exposed, thus avoiding the necessity of killing the cattle, and imposing heavy expense on the State.

So it is with pleuro-pneumonia. The degree of communicability of this disease is not over about three hundred feet—that is, it will not spread over that distance through the air. Many of these diseases will not communicate even so far as that. If care is exercised on the part of the farmer in dealing with the cattle—putting no other animals in the same place at once, and isolating the sick animals, much of the danger of communicability is obviated, and there need not be so much fear of the disease spreading through the entire herd.

I was very much interested in talking with one of the gentlemen here yesterday. He has had more experience in this disease of pleuro-pneumonia than any farmer in the State. He made the remark to me that there was very little danger of the spread of this except from the breath, unless, perhaps, the animal had been kept in the stall and a deposit had been formed from the breath in front of the animal. This was a point made from actual observation, and it was good testimony. The fact is that these are diseases which come from a germ, or microphyte, and are germitic in their origin. We have come to know that these diseases can be communicated from one animal to another by these germs, that they are directly communicable in this way and we have come to know certain facts with regard to these diseases, with regard to their germ character. These facts greatly aid us in preventing their extensive spread, and therefore we have to look upon all these diseases as being communicated directly from the germ. Certain animals become the host in one of these diseases more than another. We have to deal with them in this aspect; they are propagated in this way, and if we can do anything to prevent their spread we must do so. The only thing we can do is to decide what methods we are to adopt.

I am glad that the gentleman who preceded me spoke so

strongly on this question of the care of animals. The trouble is that we overlook the hygiene of animals. We overlook the proper care of their health in such a way and to such an extent that it brings about this disease. All the diseases of animals come directly from this want of care on the part of herdsmen, and those who do not take proper care of them are sowing the seeds of the disease they are so anxious to avoid. Hence it is that we would be entirely free from these diseases in this State if only we had the regulating of our city dairies under our control. These people in the city are in as great competition to-day with the farmers of New Jersey in this matter of dairies as are the people of any other State. It is the competition of men who are not farmers—who are dairymen in the wrong sense of the word. They put up their stalls in the cities, and have their cattle, whether sick or well, and are manufacturing milk in direct competition with the farmers of the State and are his rivals.

These vilely kept places are the sources of these contagious diseases—animals huddled together in these vile places, by men who are only in the business as a means of making money, without regard to the quality of the product they sell—men no more fitted for the business than if they had never seen or been with cattle—men who are simply producers of so many gallons of poor milk, which they sell to the detriment of honest farmers. It is from these sources that our contagious diseases are derived, and it is a matter for the serious consideration of our farmers.

It seems almost impossible that cattle can be kept as are these in the so-called dairies of the large cities, given bad water and bad food, and kept huddled together in places unfit for animals to live in. The diseases that are conveyed from such places in this and various other ways are so numerous that I need not go into the matter extensively. Suffice it to say that such places do exist, as is well known, and something should be done to eradicate them.

On this question of isolation the great point is, that it keeps out the disease, and it is often possible to prevent the disease from spreading. Farmers should be more careful with these strange animals that are brought into the State, and should not put them with their own herds until after sufficient time has elapsed to make it reasonably certain that there is no disease for

the strange cattle to communicate. I know of a herd of calves brought to Burlington county in the fall of 1886 that were not kept isolated, thus causing the disease to spread into other herds. If farmers will only recognize the importance of this they can save themselves the loss of their cattle and money. Strange cattle brought from other places should never be allowed to run with your herd until after three months, when there is no longer any probability of the disease being there.

Unless you take this precaution, you run a risk every time you purchase animals, unless you purchase them of reliable farmers, or those whom you know to be as good as their word. Either this or buy them in districts where no disease has been found, and even then you should exercise the greatest care about introducing them in your herds. I can give you instance after instance, if need be, to prove the truth of my words. In many cases that I have had experience with if sufficient time had been allowed to elapse after the strange cattle had been purchased the pleuro-pneumonia would never have spread as it has. Farmers buy these cattle and bring them home, without the slightest precautions against the introduction of disease into their herds, and the first thing you know comes the news of an outbreak of the dread disease, resulting in the loss of thousands of dollars worth of valuable cattle. Exercise more care and you will not have so much trouble with the spreading of this disease, or any disease, among your herds.

I know of one man who escaped by this method ; he bought a lot of calves, and did not like the looks of them, and he immediately isolated them. He of all the farmers in the neighborhood escaped, while many of the others suffered heavy losses. Don't move the sick animals, but move the well animals, and at once, without any delay.

The fact in regard to the disease of chickens has been alluded to,—that the cause of disease is a small worm, and that the direct cause of the spread of this disease is the earth worm, which is the host of the germ from which the worm comes. Dr. Walker shows very conclusively, by a great many experiments, after years of careful study, that such is the case. These germs are bred in the earth worm and when the earth worm is eaten in the spring by the chickens it causes the disease called gapes.

If you put your animals in the same place they will catch the disease when the worms come out of the ground. You may do anything you please to prevent, but the result will be the same—the young chicks will get the disease if allowed to run where they can get these worms. The host of the germs have gone into the ground, and they will come out again in the Spring, and destroy your animals. Many of these things are quite explicable when you study the history of animal and vegetable life. You thus see why, even with our ordinary disinfection, it is not wise in very contagious diseases to have animals kept the succeeding year on just the same ground.

I am quite unwilling to occupy you any longer, and will say no more on this subject.

I wish to allude, however, to the importance of *disinfectants*. We have advanced considerably in the knowledge of the use of disinfectants, but there is still too much carelessness in their use—lack of care in their application. Their use is exceedingly important, if they are properly used. We have already talked to you about the use of disinfectants at other times, but I would merely say here that perhaps the best that can be used are sulphur and chlorine gas. These are entirely satisfactory if properly applied, but the trouble with the use of disinfectants is, that they are so loosely and incompletely applied that they do not attain the object they are intended to attain. People are apt to take some of these disinfectants and scatter them loosely or carelessly around in a very indifferent way. It must be done properly, or else it amounts to very little. In many cases these details are thoroughly understood, and the disinfectants are properly applied, attaining the best results in all cases. The theory is thoroughly understood by physicians, but the trouble often is that their instructions are not carefully carried out, and the desired end is not attained.

I think I must also say one word in regard to the importance of skilled veterinary practitioners. It surprises me that so many farmers think so little of the calling in of a veterinary surgeon; they do not think it is worth while, or they fail to do it until too late.

I am surprised at the amount of bad doctoring there is allowed among animals—worse doctoring than none at all, in many, very

many cases. There is an immense amount of loss incurred by our farmers by this failure to call in proper veterinary attendance for their animals. I am surprised that it should be so, but the fact remains the same, nevertheless. I must say, to the credit of some of our farmers, that they have been successful in their treatment of their animals themselves. Their experience is something valuable, but this treatment of valuable animals is a serious matter, and one that requires more than the experience most farmers have. We cannot all be veterinary surgeons, and I would earnestly advise that you call in some reliable veterinary surgeon when your cattle or horses or other animals are in need of skill which you are not competent to give. Though the cost may be something, the end will show that you have saved by it. I think the treatment of domestic animals very important—just as intricate as the treatment of the human being—one is just as intricate as the other, and requires just as much skilled treatment as the other.

It requires skill, and yet we are constantly having cases where this is neglected until the disease has spread and resulted in loss to the farmer and the State. In one case I know of this was the case and the State now has fifteen cattle to pay for. The disease is allowed to have its way through carelessness oftentimes, until it spreads not only through that herd, but also through the herds of the neighbors, when perhaps by a little care in the beginning, or by killing the diseased cattle in the start, many cattle might have been saved, and the State saved a heavy bill for the cattle that must be slaughtered to prevent the spread of the disease.

I am not a veterinary surgeon, and have no interest in the matter, no interest of a pecuniary nature, but I know that we have many good veterinary surgeons throughout the State—men who, if called on in time, could oftentimes save the balance of the herds that take the disease and are lost.

The farmers of New Jersey should take this more under their consideration than they have heretofore, and they should tell the State of New Jersey to exact from her veterinary practitioners the ability she exacts from her medical practitioners, for this class of treatment is of the greatest importance, and requires just as much skill as we expect from our practitioners who treat us and who treat our families. We don't want that class of treatment that kills more than it cures.

Now let me say a few words with regard to the specifics for these contagious diseases, and I am done. Medical science is searching constantly for specifics for contagious diseases. We want to know just what specifics are most valuable in cases of scarlet fever and diphtheria, and we also want to know as well just what specifics we need for pleuro-pneumonia, and tuberculosis, and other forms of germ diseases. We learn that some of the specifics we have been using are very valuable, but let me tell you that the most valuable of all is prevention; this is far more important than any specific, though when the disease has taken hold we want to know what are the best remedies that will eradicate them. We are often helpless in the line of prevention, because in our busy work of looking after those specifics which will cure these diseases we have been neglectful of that which will prevent disease in the outset. This is where the mistake has been made; we have neglected the one for the other, apparently under the mistaken supposition that the diseases must come, and we must endeavor to cure them. Let us look more to prevention. We don't attend enough to isolation, disinfection, &c. We should look after these first, and if the disease gets its hold we must then look after cure. If we do this we can limit it to its very smallest proportions; if we do not, we must inevitably expect to see the disease perform its deadly work.

We have not time to discuss these questions fully this morning, but if more care were taken there would not be such recurring epidemics among the people, and such recurring epizootics among animals. I refer to those two specifics or remedies for prevention which are best known to all of you—vaccination and inoculation. Inoculation, as you know, is applicable to pleuro-pneumonia, and the other preventive is known as vaccination. We are well acquainted with these preventives, but we have not the time to discuss these questions this morning. The law does not allow us to practice inoculation, except as a means of limiting disease. Here is my friend, Mr. Dodd, who for fifteen years has had large experience in that direction, and for the last two or three years has been so fortunate as to avoid the disease almost entirely. You can obtain from him, as indeed you can from almost any good veterinary surgeon, the whole history of this matter.

As to animal vaccination, I am sorry to say it has not made very much progress in this country. In France it has been applied to very large numbers of sheep, and it has been applied in various diseases, and though there has been much talk in the papers of the failures that have been made, it must still be said that they have been very successful in its application. But I do not deem it worth while to occupy your time with too lengthy a consideration of this question.

We must also look for a little more help in the law. I have told you this plainly before; we must ask the law to our aid in checking these contagious diseases, if we would fight them successfully. Much has been done in New Jersey, as I have personally had occasion and been proud to acknowledge, but there remains very much still undone, and there is still very much that can and should be done. I have constantly endeavored to impress on the minds of the farmers of this State the stern necessity that exists for some prompt and strong measures that would assist them in preventing not only the spread of the disease, but its introduction into our borders. There is no use in fighting this alone, for we can never succeed. While we may succeed in holding in check, and preventing the spread of individual cases, yet we should endeavor to prevent even these individual cases.

Let me say to you now that there would never have been one case of this disease in New Jersey were it not that we are constantly receiving cattle from New York, and once in a while from Philadelphia, coming in and destroying the whole dairy interests of the State. It is not this alone, but it is also the suspicion it throws on the whole interests of the dairy. These city dairies are the bane of the farmer. I believe they should have skilled veterinary inspection. I wish you could see some of these diseased cattle, as they are kept in some of these filthy places. In one I visited, I saw fifteen cattle huddled together in the rear of a bakery. There they were crowded together, not six feet from the bakery. They were sick and diseased, and yet that man was making a fortune by means of his bakery and his milk, keeping his cows in that condition, hurrying them off to the butcher, diseased as they were, when he thought he would lose them, and putting other milch cows in their places.

You want some law that will cover these cases; you want a law

that will apply not to the man who has but one cow, but to those men who have these filthy and vilely kept dairies in the cities. Until you have such a law you can expect nothing else but that you will have disease among your cattle.

Not only have this inspection, but have a law charging this man for the inspection enough to pay the veterinary surgeon, and in this way we may hope to protect the farmers. You must have protection from this wrong and indecent rivalry, with which you are now compelled to contend.

Allow me to refer now to the *swine plague*, briefly. There have been, during the last year, a great many further inquiries made in regard to the swine plague, and the only further points elicited appear to be that it is now prevailing more in some other State. Nothing new in its treatment has been elicited, except in France, where the vaccination method has been so extensively applied. The microphytes in swine are not always the same, and there are two diseases generally known as swine plague.

While the government has been doing excellent service in inquiring into this disease, and has done work of the most technical kind, and the best of work at that, they have dealt with it only in the most technical light. The germ which causes the disease is one of the smallest forms of life. Their investigations are of the greatest advantage, and we are beginning to have a better understanding of the disease, and are getting some knowledge of how best to prevent its spread, and we would like to have some sure means of curing them. Various methods have been announced, two or three remedies having been brought to our attention last year. I am not able to say much about these remedies, however. Some of the remedies proposed are nothing more than a mixture of those ingredients which we are all so familiar with in this connection—a mixture of sulphur, Spanish brown and salt, and given in the proportion of five tablespoonfuls of sulphur, two tablespoonfuls of Spanish brown, and one of salt, in a barrel of swill, or something like that.

One of our farmers gives me this remedy and claims that it was successful, but that is the experience of but that one man. There are also a dozen prescriptions that come to us, based on the mixture of sulphur and alum and borax, iron, charcoal and Spanish brown, and we all know that these may be efficacious at

times. It is sure that these all have some influence on these low forms of life, and they are, therefore, worthy of being used and tried to some degree, but they cannot be relied on too implicitly.

I have occupied your time long enough, but if there are any questions you would like to ask me, I will be glad to answer them.

One word more in regard to this question of National legislation. We should all willingly acknowledge the aid that has been given us by the National Government in our work with these diseases.

The United States Government is now furnishing a man, without pay, so far as personal services are concerned, to aid us in our work.

A law was passed a year ago allowing the general government to pay for slaughtered cattle, on account of diseases, and we had a conference with reference to it, but they declined to pay more than the State now pays in case of slaughter of diseased animals. There were two points presented we could not agree on; the one to promise to keep cattle in quarantine so long as the general government might wish, and the other that if inoculated they must be kept in quarantine until slaughtered, and could not be sold or used for any other purpose. This would involve a heavy expense, counting many thousands of dollars. If the plans at present proposed are carried out we will have a law extending to the States of Delaware and Maryland, which the Governor of Pennsylvania, of Illinois, and of this State were compelled to decline. We ought not to be under the necessity of declining.

I sincerely hope the time is soon coming when this whole matter will be taken out of the active administration of the State Board of Health, and put under the control of the National Government. This is the only way we can be clear of these diseases, for it is the inflow of cattle from the neighboring States that causes these diseases in the State of New Jersey, and to us such a law could only result in our interests.

It has been a great pleasure to the State Board of Health during the last seven years to serve the farmers of New Jersey in the oversight of the contagious disease of animals, but I am free to say that it will be a pleasure to us to pass the whole matter over into other hands.

If we can only be relieved of this service, with the thanks of the farmers of the State for the past, we will gladly resign the whole matter into other hands. The State Board of Health has very many responsible duties devolving upon it, besides those we have been endeavoring to perform in this connection.

We have been very glad to have served you in the past, but by national legislation, or otherwise, we shall be glad to be relieved of the duties in the future.

OUR SIGNAL SERVICE.

BY LIEUT. H. H. C. DUNWOODY.

OUR SIGNAL SERVICE.

BY LIEUT. H. H. C. DUNWOODY.

I am pleased to have the opportunity of meeting the farmers of New Jersey, for the purpose of briefly explaining what is meant by the "New Jersey Weather Service."

I think you are all willing to admit that a knowledge of the probable state of the weather from twenty-four to forty-eight hours in advance is a very great advantage to every one—more especially to the farming community. The farmers are certainly interested in knowing about the weather that may be expected within the next day, and that we have succeeded in predicting the weather with tolerable certainty for from twenty-four to forty-eight hours in advance, there is no doubt. The statistics of our Weather Bureau show that during the past fifteen years about eighty to eighty-five per cent. of our predictions are correct. This percentage is well established, and there is no doubt as to the value of these predictions in regard to the weather to the people of the country—particularly the farming or agricultural interests.

The problem with our Weather Service has been to devise means of distributing the information we collect in such a way that it may be of the best advantage to those most directly interested.

The weather reports are received every eight hours in Washington. The dispatches are telegraphed to the different commercial centres, and from there distributed as widely as possible. We have no difficulty in reaching the commercial centres of population, and we have no difficulty in making these predictions, but it is the farmer we wish to reach, and how to reach him quickly is the great question for us to decide.

It was with this object in view that we have been organizing the New Jersey State Weather Service, with a view to reaching the farmer, with the greatest speed after the predictions are made, and have placed it under the direction of Professor Cook, who is aided by Dr. Penrod.

Our desire is to secure the co-operation of the farmers of the State, so that they may aid us in distributing the reports as rapidly and widely as possible, in time to make them of their full value to the farmers of your State.

The full prediction is made at midnight, and it is important that the farmer should be in possession of the information embodied in the prediction at the earliest possible hour thereafter, and much of this can be done through the co-operation of our railroad corporations, through their telegraph lines. We have already secured the co-operation of the Delaware, Lackawanna and Western Railroad, the New Jersey Central Railroad, and the Pennsylvania Railroad. They have agreed to telegraph these predictions free of cost to every point reached by their lines in the State, and if we can now secure parties willing to co-operate with this service, and take these weather indications and display flags in accordance with the circulars which we distribute, we will have taken an important step towards the fulfillment of our designs. These flags, when displayed on a flag pole, may be seen at some distance, and not only that but they may be duplicated from one point to another, so that almost, if not quite, the entire State can be covered, and farmers can readily obtain information by means of these flags that may be of very great value to them in the care of their crops. With such a set or series of sets of flags farmers may be advised of the probabilities in regard to the weather many hours before a threatened change arrives.

These flags, as adopted recently by the Government, may be purchased for about \$2.00 a set and I know there is no question but that such a system of signaling would be of very great advantage to the people of the State.

I am convinced of this from the experience I have had in other States. We have these stations throughout the South and West, and most favorable reports have been received. I could also give you instances where valuable crops have been saved by a knowledge of probable changes in the weather, put out through

the medium of the predictions of the Signal Service at Washington. I could also give you instances where crops have been lost from the failure of this knowledge being brought to the farmers of their State, where the warning was sent from the Department at Washington, and was received at the centre to which it was telegraphed, but it was not distributed, and great loss resulted from frost.

In one case where frost was predicted in the vicinity of Madison, Wisconsin, the warning had been sent, telling the farmers that the frost would probably reach them in twenty-four hours. That dispatch went to the telegraph office at Madison, but they had no State Signal Service, no organization, or no one to attend to it, and the telegraph operator not thinking it of much importance, put it in his drawer, and the Governor of the State told me that the failure to deliver that dispatch, or to distribute the knowledge of the expected frost, cost the State of Wisconsin every blade of tobacco in that region. You can see what a saving this would have effected for the farmers, had they known what was coming. Had they been advised of the coming of the frost twenty-four hours in advance they could have saved every blade of it, for it could have been safely housed in the interim.

You farmers in New Jersey have your cranberry bogs. The time may come that you may some day be able to save your whole crop of cranberries by having that knowledge, which has proven so valuable to those districts availing themselves of the predictions of the Department at Washington.

These State organizations are effected for the purpose of distributing this knowledge through all parts of the State, and if they had had this service in Wisconsin this crop of tobacco I have referred to would have been saved. Why should it not be possible that in the near future such a knowledge of the probable changes in the weather, in advance of their occurring, may be of the very greatest value to you?

In the South this information is also distributed and we have thus been enabled to save to the farmers of that region crops of very great value.

There is still another important feature—the cold wave warnings which are sent out from the Signal Service Bureau. These, in those States having the advantage of the State organizations,

are distributed widely and effectively throughout the different localities of the State, by co-operation with the railroads. By a similar co-operation in this State you might be able to do the same. If the railroads will co-operate with you in transmitting messages free the farmers will know when the severe cold waves are expected, and you will know of these predictions in time for them to be of some value to you.

The charts I have brought with me—and which you are now examining—give an illustration of the cold wave of January, one year ago. There were indications of its approach, and its coming was known at the Signal Office at Washington forty-eight hours before it reached the Mississippi valley, and sixty hours before it reached the Atlantic coast. It came out of the extreme Northwest and moved down through the Mississippi valley, and the moment it was observed the warnings were telegraphed through the central valleys and down through the Southern States, and along the Atlantic coast. Now, if we had had these organizations in the different States to take charge of the distribution of the predictions (we do all we can around our own stations, in their vicinity), it would have been of untold value to the farmers in some sections reached by that cold wave. There are so many points that cannot be reached by telegraph, and these outlying points can only be reached through the co-operation of the farmers themselves.

Make these organizations, and make your arrangements so that the largest number of farmers may be advised of these predictions. This is especially important to those who do not live within reasonable distance of railroad points, and who seldom receive the daily papers while the news is fresh.

In Georgia the different lines of railroads carry these signals on their trains, and those people living near the railroad can see the trains as they pass, and can thus acquaint themselves with the predictions. This is a great help, also. Instead of the flags they carry a simple card showing these signals, the card being placed on the baggage car. As the train passes through the region all those living near or within sight can ascertain the character of the weather predictions, and many of the people have flag poles and raise their flags after the train passes, so that the information is soon very widely distributed, and the probable

change of the weather known amongst the people in advance for miles around.

The State service in the different Southern States is progressing rapidly, and we receive communications daily, almost, commending the value of these dispatches and desiring an extension of the service.

The service in New Jersey has only been established in the last two months, and is yet in its infancy as I said before. Dr. Cook has charge of it at New Brunswick, with Dr. Penrod as his assistant.

I am confident that within a year you will all appreciate the value of this service to the farmers of New Jersey.

I thank you, gentlemen, for your kind attention.

IMITATION BUTTER.

BY DR. WILLIAM K. NEWTON, STATE INSPECTOR.

IMITATION BUTTER.

BY DR. WILLIAM K. NEWTON, STATE INSPECTOR.

Mr. President and Gentlemen :

At the request of the Board of Directors of this Association, I have summarized the facts that I intend to embody in my report to the Comptroller. Many of the facts I shall dwell upon are as well-known to you as to me—some of you—while some of you may listen to them with interest.

The State Board of Health, by authority of section 15 of the act, appointed me Dairy Commissioner on the third of April, and the duties of the office were immediately assumed.

The early part of the year was spent in investigating the character and extent of the trade in imitation dairy products, and as dealers seemed to be ignorant of the provisions of the law every means in my power was employed teaching them. Advertisements were inserted in the principal papers in our chief cities and towns, giving an outline of the law, and circulars printed in German and English were mailed to all dealers of whom we had knowledge. This action was taken because of the delay in publishing the official copies of the law through the regular channels.

The information thus circulated informed dealers what was expected of them, and left no opportunity for a plea of ignorance, should any violation be detected.

As considerable litigation was anticipated, and as the attorneys of defendants would be ready with various objections and motions, it was deemed best to settle all doubtful points before any suit was begun. To this end a council of prominent lawyers, whom I had retained for the State, was held, and each section of the law thoroughly discussed, and a definite and uniform line of action outlined. The proper blanks were also prepared.

The course outlined at this meeting, with one or two excep-

tions, has been closely followed, the result being that our attorneys have been well prepared to meet points made by opposing counsel. The form for proceedings is very clearly understood, but two or three questions remain to be decided by the higher courts, towards which some twelve cases are moving with the usual tardiness characteristic of legal affairs. It is possible that the disputed points will be decided during the next term of the Supreme Court.

The language of the act is so clear that no doubt is entertained as to the proceeding required and that a summary conviction before a magistrate, with an appeal to Quarter Sessions, is provided for is very certain. Opinions to this effect have been given by many Judges, and the brief prepared by Mr. W. H. Corbin, which is given in the appendix to my report to the Comptroller, seems very conclusive.

It has also been decided that the proof of guilty knowledge is not required by the act.

After considerable debate I determined to enforce, at first, one of the most important sections of the law, and section four was selected to test the character and extent of the trade in fraudulent butter. This part of the act requires that when imitation butter is sold the purchaser shall first be informed as to the character, and shall also be handed a printed notice giving the name of the substance. Prior to December 1st, all prosecutions were made on this one point of fraudulent sale, and when it was ascertained that nearly all transactions in oleomargarine were in violation of the section it was thought best to enforce the whole law rigidly. Hence, latterly, strict compliance with all provisions of the act has been exacted, and due attention has been given to the proper marking of the tubs, selling substances in imitation of butter, and deceptive marking. This gradual process of educating dealers has operated very well, and they are compelled to acknowledge that this method is very fair and equitable, and that it has accomplished more than harsh proceedings would have done.

Section five is one of the most vital in the act, and test cases were begun under its provisions during the latter part of December. This section forbids the sale of any oleaginous substances colored in imitation of butter ; that is, any article made in sem-

blance of butter, as made out of milk or cream. It is argued by the advocates of butter imitations that there is a strong popular demand for these goods, and that if permission is given to sell them for what they are worth and on their merits all deceptive practices will be abandoned. Now, in answer to that claim, we may say the public has never had an opportunity to judge oleomargarine on its merits, for it is rarely if ever sold by its true name or under its own color, hence the enforcement of the section referred to will not only prove the truth or falsity of the statement, but it will also give the people a chance to know the article and test it intelligently. Oleomargarine when compounded as manufacturers always make it, is colored yellow, in imitation of butter; naturally, the substance is nearly white, with a very faint creamy tint. If the manufacturers wish to introduce it to the public as a new article of food, let them present it in its normal condition, unstained and uncolored, then the people will judge it on its merits.

The enforcement of section 5 will test this question, and if the claims made by the dealers in oleomargarine are honest, no opposition should be made to its provisions.

During the time embraced by this report, ninety-two suits against violators of the law have been instituted. Judgments for the State have been rendered in thirty-six cases. Eighteen cases have been appealed to Quarter Sessions by defendants. Four cases have been taken by writ of certiorari to the Supreme Court. Twenty-eight cases are untried in Court, or are in the hands of attorneys for the State. Many cases, where they have shown mitigating circumstances, have been abandoned, or when the defendant has been too poor to pay the penalty, judgment has not been executed.

In three cases the defendant had been imposed upon by middle men, and had sold oleomargarine, thinking it was butter; these cases were adjusted so that innocent people have not suffered.

Penalties to the amount of \$2,100 dollars have been paid into the State Treasury, and \$1,000 are still outstanding in the hands of courts, and will be paid on this year's account. Besides this, \$850 dollars have been paid to the Treasurer on account of violations of the milk law.

The expenses of the Commission have been as follows :

Offices expenses, telegrams, postage, expressage, printing and incidental expenses of the general office, \$354.71. Travelling expenses of Commissioner, \$192.50. Pay of agents and assistants, purchases of samples, pay of witnesses and travelling expenses, \$2,237.17. Chemical work, analyses and expert work, \$3,171.30. Court expenses and attorney's fees, \$887.40. No money has been expended for clerk hire or office rent.

The expenses of the Department have been higher than was at first estimated, but as the whole ground had to be covered, and as the fraudulent sale of oleomargarine exceeded our original calculation, the cost of enforcing the law was greater than was imagined.

Less but not so efficient work could have been done and with less money, but I think that the thoroughness of my efforts, and the effect on the trade in fraudulent dairy products, as shown by the marked falling off in the amount of sales of these goods, will fully justify the expenditures made. Now that the trade is under full control it is not probable that the expenses of this year's work will be again equalled, and it is certain that next year the administration of the department will be much more economical. The agents in my employ are now thoroughly trained, and the work will be done by a less number of men.

The chemical and expert work has been very expensive, but, as the fees paid were very low, the amount done for the money expended has been great. New processes had to be worked out, and accurate methods devised. The character of the scientific work done may be seen by reference to the report of Prof. H. B. Cornwall, of the College of New Jersey, as printed in the appendix to my report.

It was found when I assumed the management of this department that the methods of analysis were not as accurate as desired, but we are now in possession of methods that will detect adulteration of butter and imitations of butter with absolute precision. The method employed to detect coloring in butter is new and was devised by Prof. Cornwall, after ascertaining that the plans followed in other States were fallacious.

All this work was costly, but as it will not have to be repeated, the money paid for it was well invested.

I would recommend that the State Board of Health be author-

ized to appoint a chemist for this commission, and that his duties be clearly defined, so that all analyses required under the provisions of the dairy protection act, the act to prevent the adulteration of milk, and all other acts in charge of the State Board of Health, shall be made by him. Such a plan would concentrate the work now performed by many chemists, for this commission and the Board of Health, and would save the State at least two thousand dollars a year.

Besides the work outlined above, I have visited many factories where oleomargarine is made, and have studied the methods of manufacture, and the materials used. The results of these investigations are embodied in a paper given in the appendix to this paper.

The results of my examination into the trade in oleomargarine show that there is really little or no popular demand for butter imitations, and when sales are made openly and with good intent the purchaser is generally a contractor, an inn or hotel keeper, or a boarding house mistress. Foreigners who seldom know the taste of butter, or who only want a palatable grease to spread on their bread, are large buyers, but even they purchase it thinking it is butter. If they are informed what the substance is they imagine that the name given it by the dealer is another name for butter. In Paterson, where there is a large foreign population, twenty-four stores openly deal in imitations of butter; twelve of these shops are either owned by Hollanders or deal with people of that nationality.

Most of these substances that are sold are disposed of fraudulently and every legal provision that compels a dealer to sell openly and honestly decreases the sales, not from the mere interference of the law, but because of the difficulty of persuading people to buy if they know what the substance is. The effect of the national law which requires dealers to be licensed endorses this view, for as soon as dealers were advertised and branded as traders in oleomargarine the people lost confidence in them and refused even to buy butter of them.

The small license fee exacted does not deter, but the fact that the people know what disposition there is to sell them bogus articles causes the trade to fall off.

Prior to the enactment of the National law, at least eighty per

cent. of all the grocery stores in the State sold a greater or lesser amount of oleomargarine, but now there are but one hundred and forty-nine licensed dealers. The falling off is due not so much to the license fee as to the fact that the State and National laws working together compel people to sell the substance for what it is. Each law is complete in itself, but one is of no use without the other, as the State law compels dealers to inform purchasers what it is they buy, while the National law contains no such necessary restriction.

The following table will show the location of the license dealers.

Bayonne.....	2
Beverly.....	1
Bordentown.....	1
Bridgeton.....	2
Camden.....	10
Chester.....	1
Elizabeth.....	17
Guttenburg.....	1
Gloucester.....	2
Harrison.....	3
Hammonton.....	1
Hoboken.....	11
Jersey City.....	35
Midland Park.....	1
Mount Holly.....	4
Millville.....	3
Midvale.....	1
Newport.....	1
New Brunswick.....	2
Orange.....	2
Paterson.....	24
Point Pleasant.....	1
Princeton.....	1
Perth Amboy.....	4
Phillipsburgh.....	1
Red Bank.....	1
South Amboy.....	4
Smithburg.....	1

IMITATION BUTTER.

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Trenton.....	5
Tuckerton.....	1
Union	2
Weehawken	1
Woodbridge.....	1
<hr/>	
Total	149

It was stated above that the National law did not deter persons from selling bogus butter for the real article, even if a license was taken out ; in proof of this I may say that forty-two dealers who were protected by the government license were detected selling oleomargarine for butter.

As the United States law is given in full in the appendix to my report to the Comptroller, it is necessary for me to mention only a few facts concerning it, as the history of its passage is known to all. I may only say that this law has been of great assistance to the officers of the State, and the collectors of internal revenue have been very courteous, giving all the information and assistance in their power. The claim made by the advocates of imitation butter, and published extensively throughout the country, to the effect that the government stamp was a certificate of purity, and that the sales had increased largely since the passage of the national law, is without foundation, and is calculated only to deceive. The reverse of this statement is true, for since the State and National laws have been enforced the sales in oleomargarine have decreased at least sixty per cent. In fact many who had taken out licenses have returned their stock of oleomargarine to the factory, and abandoned the business when they ascertained that the government permit did not exempt them from the surveillance of the State officers ; in other words, *when they found out they could not transact a fraudulent business* they were compelled to stop trading in imitation butter, thus illustrating the truth of my statement that dishonorable dealing is, as a rule, the foundation of most of the transactions in this substance. I am forced to state, in justice to manufacturers, and wholesale dealers in imitation butter—dairy products—that they rarely attempt any deception, but sell the substance openly, and for what they claim them to be to jobbers and retail dealers.

The fraud begins when the substance reaches the middle men and the retail dealers, for with them deception is the rule.

Manufacturers have often asked why their product is so hedged about by legal restrictions, but if they knew the character of the retail trade, they would not be ignorant as to the methods of deception practiced by the latter.

If oleomargarine could be sold with its true color, and by its own name, openly and honestly, and at a fair profit, then we would be in a position to judge whether or not the people would use it.

Sold, as it is now, for butter, colored in imitation of butter, and at the price of butter, the people have had no opportunity to accept or decline it, as their opinions may dictate.

It seems hardly necessary at this time to discuss the question of the effect of imitation dairy products on the dairy interests of this country; that these interests have been interfered with is conclusively shown by the strong legislation that has been demanded by the agriculturists throughout this country, and the fact that this rising opposition is so strong and unanimous, proves that there must be a very good foundation for the prevalent opinions.

The discussion of matters of policy seems out of place in a report such as this, for the purpose of a report is to outline the work done, not to tell why it is necessary, hence I have placed in the appendix to my report such topics as bear on the healthfulness of oleomargarine and the commercial aspects of the question.

I will now give you a paper on oleomargarine as regards its history, methods of manufacture, and a description of the materials used in its composition.

I have thought it best to separate the account of work done from the consideration of historical and technical matter, hence there have been grouped together in this article all the facts at our disposal relating to the history of oleomargarine, its competition and the processes of manufacture. An account is also given of the popular sentiment regarding oleomargarine as evinced by the enactment of laws regulating or prohibiting its sale. Finally, we shall have to consider the commercial and sanitary sides of the question.

In the following statement I have endeavored to view the subject as critically and as unprejudicially as possible, and in weighing the evidence due attention has been paid to the claims of the advocates of imitation butter, and at the same time an attempt has been made to exclude all opinions not founded on fact. A calm discussion of the whole question seems desirable at this time, when thinking men are debating the subject in their own minds.

The term "oleomargarine" is used to embrace the whole class of imitations of butter, without regard to the various names, such as butterine, suine, artificial butter, or imitation butter, that are applied by the trade, and as the National law has defined the meaning of this term, and as it recognizes only that one name, it seems proper to suggest that the State law should accept it to the exclusion of all others.

THE HISTORY OF OLEOMARGARINE.

About the year 1869, Mege Mouries, at the solicitation of the French Government, was engaged in the study of certain questions relating to cheap food products. He says: "I was invited to make experiments as to how far it was possible to manufacture a butter for the Navy Department and the poorer classes, which would be cheaper than butter and without any rancid taste. Different experiments made at the Imperial Farm, at Vincennes, showed the following results: Cows which were deprived entirely of nourishment decreased in weight and gave a smaller quantity of milk, but it always contained butter, which, under the circumstances, could be derived from no other source than the fat of the animal. Through the respiratory process the stearine is extracted from the absorbed fat, which is contained in the circulation, while its oleomargarine is conveyed to the udder where, under the influence of the pepsine, to be found there, it is changed into butter. On the basis of this observation I tried to imitate the natural process, using at first the fat of the cow, and afterwards the fat of oxen, and I obtained a fat which melted at almost the same temperature as butter; it had a sweet and agreeable taste, and in most cases could replace the common milk butter, but not the fine and flavored butter of good quality. It

also had the advantage of keeping a long time without becoming rancid.

The above statement made by Mege will give a very correct idea of the theory that prompted him to devise the various methods of manufacture. He supposed that the butter fat was derived from the fat of the cow and carried by the circulation to the udder, where it was, by means of an organic substance like pepsine, converted into butter; hence, if he took the fat of a dead cow, melted it, extracted the stearine, and mixed the liquid fat with cow's udder or stomach, that true butter would result. This plan he carried out at first with cow's fat alone, but latterly with the fat of oxen.

The title "oleomargarine" that he gave the substance was based on the then prevalent theory that there was a substance called "margarine"; this is now known not to be true.

Mege had a factory at Poissy and manufactured oleomargarine for the markets of Paris, but the Franco-Prussian war interrupted the industry for some time.

As the details of the methods of manufacture used by Mege may prove, at least, of historic interest, an outline is herewith given, as published by M. Felix Baudet, in a report made to the Board of Health of the Department of the Seine, in 1874, and for which I am indebted to the report of the Imperial Board of Health of Germany, for 1886.

The best quality of fresh beef fat is crushed between two cylinders provided with conical teeth, by means of which the membrane is torn to pieces. The crushed material falls into a deep vat, heated by steam, into which is put one thousand kilogrammes of fat, three hundred kilos of water, one kilo of carbonate of potash, and two sheep's or pig's stomachs. The temperature of this mixture is raised to forty-five degrees C. In two hours the membrane, which has surrounded the fat, is dissolved under the influence of the pepsine contained in the stomach, and the fat which has been completely melted swims on the surface.

This is now drained off, through a tube which has an attachment like a sprinkler, into a second tank, which is heated by means of a water bath to about forty-five degrees C., when two per cent. of salt is added to the fat to facilitate the cleansing. After resting two hours the fat is clear, and has assumed a beau-

tiful yellow color, and has an agreeable odor. It is now drained off into vessels to cool. On the next day the fat has solidified and become granular. It is now wrapped in linen and placed in an hydraulic press. By pressure the fat is divided into two portions, the stearine and the liquid oleomargarine. The stearine which remains in the press, and which melts at forty to fifty degrees C., is used in candle factories.

To manufacture artificial butter with the aid of oleomargarine, Mege mixed in a churn thirty kilogrammes of the liquid fat, with twenty-five litres of cows milk, and twenty-five kilogrammes of water, which contains the soluble parts of one hundred cows' udders, that have been macerated in the water; coloring matter is added. The churn is now put in motion, and at the end of a quarter of an hour the water and the fat have formed an emulsion under the influence of the pepsine in the stomachs. The churning is continued until the substance looks like butter. When the process is finished water is put in the churn to separate the product from the butter, milk, etc.

"The product is now turned into a machine and worked like butter. The material so obtained has a fine and uniform consistence."

The language used above is that of the reporter Baudet, I having translated it without adding any remarks. The process described has been very much modified, as will be hereafter seen, and very little of the original method is now used.

Mege patented his invention in England in 1869, and in the United States in 1873.

It may be stated here that, although many patents have been granted for methods of manufacture, not one of them is in use to-day, and the manufacture of oleomargarine is open to any person who can command capital enough to embark in the business. The original Mege patent was bought by American capitalists, but only for the purpose of protecting themselves, and most of the processes now in use are not covered by the original patent.

A curious fact is stated by Mott, in his "History of Artificial Butter"—that in England, in 1846, William Palmer took out a patent for "treating fat or fatty matters from beef, mutton, veal, or lamb," but the product in no way resembled butter, and was not intended to take its place.

Leaving the birthplace of oleomargarine, we turn to this country to learn where it was first made here. There is some difficulty connected with this question, but it is an historical fact worthy of note that oleomargarine was first made in the United States experimentally about the year 1870, in the laboratory of Prof. Chas. P. Chandler, at the School of Mines, Columbia College, New York.

About the year 1873, one Paraf started a company in New York, called the "Oleomargarine Manufacturing Company." The process he used was like Mege's, but the material produced was a granular fat, with none of the odor or taste of butter; hence but little was sold.

During this same year or a little later, the United States Dairy Company opened a factory in Brooklyn, N. Y., and Dr. H. A. Mott, Jr., the chemist of the company, studied the Mege process, made many improvements, and a material was manufactured that closely resembled butter. Prior to his discoveries the oleomargarine had a granular consistence, and not the smooth, even texture of butter.

Mott's improvement consisted in allowing the melted material to flow into cold water or cracked ice, and by this method the desired butter-like texture was obtained. The inventions of this gentleman so improved the process of Mege that the manufactured product no longer resembled "drippings," or tallow, but closely simulated butter. Our researches have not revealed the fate of the United States Dairy Company, but after 1876 and 1877 many factories were established in different sections of the country, most of them employing Mott's process. About this time the Commercial Manufacturing Company began operations on a large scale in New York, and made from twenty-five thousand to forty thousand pounds of oleomargarine a day. This factory was closed soon after the enactment of the prohibitory law in New York.

From the year 1877 to the end of 1886, when the national law went into effect, about eighty factories had been established. On the first of December, 1886, there were only thirty-four factories in the country, located as follows: In Colorado, two; Illinois, ten; Indiana, one; Kansas, one; Massachusetts, one; New York, six; Ohio, four; Pennsylvania, four; and Rhode Island five.

As will be seen by the location of these factories they are, as a rule, adjacent to large stock yard centres, or slaughter houses, in the neighborhood of Chicago there being eight large establishments.

The extent of the business of making oleomargarine in the United States can only be surmised, as no accurate figures were published until the factories were placed under the charge of the Internal Revenue Department.

From the official reports of the office, we learn that about December 1st, 1886, there were twenty-three hundred tons of oleomargarine at the factories and warehouses throughout the country, and of this more than one-half was in the factories around Chicago. As these statistics embrace only a very small portion of the year, we can only conjecture what the annual output must be.

The methods of manufacture are so simple and mechanical that but very few men are employed in the factories, and probably not more than fifteen hundred persons have employment in this line of work in the United States; hence the trade cannot be considered of great importance from the labor side of the question.

The progress of the oleomargarine industry in the United States has been slow when compared with the rapid strides in Europe. In France, Belgium and Germany there are hundreds of factories, and in Holland, a country about half the size of Ohio, no less than one hundred and fifty are established.

The manufacture of imitation butter is but a small part of the business of the large stock yards and abattoirs in this country, as about seventy-five per cent. of the oleomargarine oil, one of the ingredients of imitation butter produced by them, is exported, Holland taking a large part of it, one hundred and fourteen thousand three hundred tierces being sent to the latter country in 1886.

Having devoted sufficient space to the consideration of the history and extent of the oleomargarine trade we may now pass to a description of the methods of manufacture.

METHODS OF MANUFACTURE.

The outline of the Mege process, as given above, may serve as

an example of the methods first employed, but the original plan has been so much modified that but little of it now remains; it was, however, the foundation of the whole industry.

For the sake of completeness and system I shall first explain the earlier methods used, then the improvements and modifications, and, finally, the processes now used in American factories.

The first American modification of the Mege process, made by Paraf, was a failure; hence we may dismiss it from our consideration and begin with the first successful plan followed, as described by Mott.

The following was the method used by the United States Dairy Company, and the Commercial Manufacturing Company; the resulting product was the true "oleomargarine."

The scrap fat is thrown into tepid water and left at rest for about an hour, when the tepid water is removed and replaced with cold water, and the fat allowed to rest for another hour; then the fat is thoroughly washed. The fat is next put into a machine called a "hasher," where it is cut into very fine fragments, and then forced through a sieve into a tub. The fat, now in a disintegrated state, is removed to a melting tank, where it is heated to about one hundred and sixteen to one hundred and twenty degrees, at which temperature the fat melts. The membrane around the fat now separates, and a clear, yellow oil floats on top. The membrane and scrap is now removed from the tank and the oil is drawn off into wooden cars, which are removed, when full, to a place where the fat is allowed to granulate; this takes from twenty-four to thirty-six hours.

When the fat has cooled and granulated it is packed in cloths and put into a press, the packages being arranged in parallel layers, and then piled one on the other. When the pressing is begun the oil flows out, leaving the solid stearine behind in the cloth. The oil obtained from the press is removed to a cool place, until the temperature is about seventy degrees, when it is ready for the next operation. The oil, now at the proper temperature, is removed to the churning room. The churns are similar to those used in the large creameries. One hundred pounds of oil are now introduced into the churn at a time, with from fifteen to twenty pounds of milk. About three ounces of annatta solution, to which bi-carbonate of soda has been added, is put into

the churn. The mass is now churned until the oil, milk and other ingredients are thoroughly mixed. When this is accomplished the material is allowed to flow from the churn into pounded ice; as the oil flows on the ice it is kept in constant motion until solid. The material is left in the ice for some time, then it is crumbled up fine, and again introduced into a churn, together with churned sour milk.

The churning process adds the flavor of the milk to the oleomargarine. When this second churning is completed the substance is removed from the churn, mixed with salt, and worked.

The expenses and income for a factory working with this method, and turning out five thousand pounds of oleomargarine a day, will be about as follows :

All expenses.....	\$960 00
Value of products.....	1,400 00
	<hr/>
Profit a day.....	\$440 00

It will be noticed that the use of the stomachs of cows and sheep, as recommended by Mege, was abandoned in the American factories, as was also the use of cows' udders, so that the process was divested of many of its offensive details.

The process as described by Mott was used for many years, but recently changes have been made, and the oleomargarine now sold is quite different from that in the market five or six years ago; these differences are due to radical variations introduced by western manufacturers, which will be described later on.

When first established the oleomargarine factories were separate and distinct from the abbatoirs and stock yards, the former buying crude fat from the slaughter houses and trying it out themselves, but now the great slaughtering establishments prepare the oil and sell it to the factories. In the West the greater number of the abbatoirs and packing houses have oleomargarine factories under their own control and management, and make imitation butter, besides supplying the trade with oleomargarine oil. In the East the factories buy all the materials used, and do not prepare the oil or other ingredients. As would be supposed, from this state of affairs, a great number of oleomargarine makers are mixers of fat, buying the materials in the market at

the lowest rates, and knowing little about the origin or purity of the substance they use.

It was stated above that the original processes had been very much modified of late, the principal change being the introduction of lard in the product, either by mixing or melting with the beef fat. The change was introduced by western manufacturers for the purpose of utilizing the hog fat they rendered, thus making a market both for the beef fat and for the lard. This change has had much to do with the increasing popular distrust of sham butter, and it is probable that the original oleomargarine, made from beef fat exclusively, would have won the confidence of the people, in time. This matter will be referred to later on.

As was intimated above, the manufacturer of imitation butter is only a compounder of fat, and each maker may have a slightly different method, but the outlines I give below will indicate those prevalent.

These will be described as I have seen them, or as the sworn statements of responsible Western manufacturers represent.

First—The method for making what may be called “straight” oleomargarine ; that is, the article made without lard.

The oleomargarine oil, or “oleo oil,” as it is called, is melted in a steam jacketed kettle, until free from lumps, when it is run into a churn, and there mixed with milk and coloring matter. Some makers add cotton-seed oil, or sesame oil. When the conglomeration is properly made it is run onto ice, then mixed with salt and worked. Very little of this true oleomargarine is now made.

Another process is as follows : Oleo oil and lard are melted together, and, when liquid, cotton-seed oil and coloring matter are added, then the mass is churned with milk, run into ice, salted and worked. Some makers mix the whole mass in the kettle, others run the fat into churns, each man having some slight modification, some using a great deal of lard, and cotton seed oil—others less.

Many of the Western manufacturers use butter in the admixture ; this is either mixed with lard and oleomargarine oil when cold, or churned in with the melted fats.

The statement made to Congress by five of the largest manufacturers in the United States—Armour & Co., Swift & Co., Geo.

H. Hammond & Co., N. K. Fairbank & Co. and Samuel W. Allenton, describes the prevalent method as follows:

"The component parts of oleomargarine and butterine are oleo oil, neutral lard, fresh cream and milk; some use butter-milk, choice creamery butter, fine dairy salt, and clear cold water. The coloring matter used is precisely the same as that used by dairy men. At certain seasons of the year a very small quantity of salad oil, which is produced from selected cotton seed, is occasionally, but not generally, used, to soften the texture of the product."

The adjectives used are those of the manufacturer to suit his own notions; some use lard to excess; some use large quantities of cotton seed oil; but all seek to make an article as closely simulating butter as possible. In some factories that I have visited the materials were all good; in others cheaper substances were used.

I think enough has been said as to the methods of manufacture. Each manufacturer varies the process.

MATERIALS USED IN THE MANUFACTURE OF OLEOMARGARINE.

Oleomargarine Oil, or Oleo Oil.—The method of making this oil has been sufficiently described. It is the beef fat, freed of its membrane and stearine, and is of a creamy color, and when cold, of a granular consistence. The fat used to make this is that taken from the gut, and the interior of the carcass, except the solid portions above the back bone, and around the kidney, the latter (the suet) being sold with the sides.

In well regulated slaughter houses the gut fat and trimmings are put immediately after killing into cold water, where the material is chilled and washed. From these tanks it goes to the "hasher," where it is cut very fine, and then falls into rendering kettles. When melted the scrap and membrane are removed and the oil is put in boxes and allowed to granulate at a temperature of about eighty degrees. When semi-solid it is put in presses, where the oil and stearine are separated.

The quality of this "oleo oil" depends on the care, skill and integrity of the maker, and as a temperature of one hundred and twenty is rarely exceeded the fat at no time is cooked, which, in-

deed, would be fatal, because a bad flavor would be imparted to the oil should a boiling temperature be reached.

The trade in this oil, which is sold in tierces holding about thirty-five gallons, is enormous, but the greater part of it is shipped abroad, some two hundred and fifty thousand tierces having been exported last year.

The prices obtained for this substance vary from eight and one-half to eleven cents per pound.

Lard or Neutral. This is rendered very much in the same way as the beef fat, but at a lower temperature. It contains considerable stearine. The so-called "neutral" is made by rendering the leaf lard, and then allowing the fat to run into a bath of cold brine, made of salt and water, where it is allowed to remain for forty-eight hours; then it is freed from water and put into tierces.

This "Neutral" is used exclusively by makers of sham butter, and the amount depends altogether on the caprices of the manufacturer.

The term "leaf lard" has not the significance it had formerly, for all parts of the hog fat are used in its manufacture, hence it is not really made of the leaf. This statement is founded on the evidence offered in the trial of *McGeoch vs. Fowler Brothers*, tried in Chicago in 1883, for the testimony in that case showed that no great care was employed to separate the fat from the different parts of the hog, and that the name "leaf lard" meant nothing.

Well made neutral lard is a white, bland fat, of a sweet flavor and devoid of smell. It is added to imitation butter to cheapen the cost of production, and to give the article the smooth texture of butter.

The substitution of this article for beef fat in bogus butter has been, no doubt, the cause of much of the prejudice against these imitation compounds, as many people are opposed to the use of hog fat in any form.

The introduction of oleomargarine oil mixed with lard caused a serious uprising in India, and the English government had to adopt serious measures against the fraud.

In Ohio the State law permits the sale of oleomargarine when made exclusively of beef fat; that containing lard is not allowed to be sold.

These facts are mentioned somewhat in detail, because they are not generally known, and the people should be informed in regard to the composition of imitation butter.

The market price of this "Neutral" by the tierce, is seven and a half to eight cents a pound.

Cotton Seed Oil.—As its name implies this oil is expressed from the seed of the cotton plant. The quality varies very much, some of the higher grades being bland and sweet, closely resembling olive oil, while the cheaper qualities are harsh, and at times very offensive. It is called in the trade "Salad Oil," or "Union Salad," and the finer qualities are sold as olive oil; in fact seventy per cent. of the so-called olive oil or salad oil, sold in bottles, is nothing but cotton seed oil. When improperly made or poorly clarified it becomes very offensive, especially upon exposure to the air.

At some factories visited the makers of oleomargarine use the very best qualities; in others, what the trade calls "cotton seed foots" were used; that is, the inferior quality. This oil is added to the oleomargarine to give it a butter-like texture, and also to give it a good appearance when the "tryer" is used. The quantity used depends wholly on the opinion of the manufacturer. This oil sells for about forty-two cents a gallon.

"Sesame Oil."—This oil is used by the manufacturers for the same purpose as the cotton-seed oil, but, because of its cost, is not so generally utilized. It is obtained from the seed of a tropical plant. It is a yellow oil, with a sweet, nutty flavor. As it is worth about seventy cents a gallon, very little of it is sold.

The other ingredients of oleomargarine, annatta and salt, need no description.

The comments on the ingredients, as above given, are somewhat extended, but it was thought best to give as much information as possible, so that the public should thoroughly understand the articles used in compounding imitation butter. Now that we have gone over the process and materials used by oleomargarine manufacturers, it will be readily seen that the whole business, beyond the compounding of various fats, and the addition to the product resulting from this compound of a sufficient quantity of milk to give the product the flavor of butter, is nothing. The imitation is finally stained a yellow color, so that it shall present the appearance of good butter.

Now, if all the makers used the best ingredients and compounded them uniformly and accurately the price and quality of the product would be easily estimated, but as there is no regular formula used, and as manufacturers seek for cheap fats, the oleomargarine made by different firms is never alike, hence the public may get a fair article to-day, while to-morrow an inferior substance may be sold them. As the manufacturers rarely put their names and addresses on the packages the public is unable to discriminate between the good and the bad. And as the makers are competitors among themselves for trade the prices are never uniform; thus oleomargarine can be bought at wholesale for ten and a half cents a pound, while the higher grades command eighteen and twenty-two cents.

This non-uniformity in composition has prompted some States to enact laws compelling manufacturers of oleomargarine to brand the packages with the names of the ingredients, thus informing the public what the character of the substance is.

OLEOMARGARINE FROM THE SANITARY STANDPOINT.

The most difficult question for us to settle satisfactorily is that concerning oleomargarine as an article of food. Is it healthful and digestible, or is it dangerous to health? These problems cannot be solved without weighing well the effect of the verdict. Unfortunately the question is much complicated because of the want of uniformity in methods of manufacture. If pure, clean, beef fat, flavored with milk or cream, was the substance always sold, and if care in its manufacture was ensured, and if the compounder was always conscientious in methods and in the use of materials, we could easily decide. But when various fats from many sources are employed, and when manufacturers seek only to turn out a saleable product, we must hesitate before publishing our opinion.

No question of so much importance has ever before agitated the people. Commercial or mercantile discussions are easily settled, but when the health of the people is at stake greater care is necessarily employed in the investigation.

If this problem was merely the substitution of one article of food for another no one would hesitate to decide, for commer-

cial laws could soon provide for the change, but so many phases of this new question need investigation that the people hesitate before formulating an opinion.

The writer entered the field of investigation with a critical and unprejudiced mind; he has tried to work out the problem without previous bias, hence he naturally turned for information to the reports of scientific men who had previously written on the subject, and he also visited the places where oleomargarine was made.

It must be remembered that all scientific men who have looked into the matter decide that a well-made imitation butter is a healthful product, but nearly all their opinions are based on investigations made in factories where the Mott process was employed, and where beef fat only was used. No person has carefully written on the substances made principally of lard as are now sold. To substantiate this statement I have but to quote from the published opinions of a few gentlemen whose names are paraded in the papers like the certificates attached to patent medicine advertisements.

In 1880 the Commercial Manufacturing Company and the United States Dairy Company requested a number of scientific men to investigate the methods they employed and the materials used, and to present their opinion thereon.

This was done, and Prof. S. C. Caldwell, Dr. C. P. Williams, Prof. S. W. Johnson, Prof. C. A. Goessman, Prof. C. E. Chandler, Prof. H. Morton, Dr. H. A. Mott, Prof. J. W. S. Arnold, Prof. Geo. W. Barker, and Prof. W. O. Atwater reported that they were acquainted with the Mege process, and that oleomargarine made by that process was a good and healthful product for use as a substitute for butter. Many of these gentlemen have not since written any statement, and none of them have given any opinion as to the mixture of lard and other fats, as now made and sold under the title of oleomargarine. In fact, two of these witnesses recently testified in court that they did not know that lard was commonly used.

As was said, nearly all the scientific opinions given on this subject have to do only with oleomargarine made from beef fat.

In 1881 a report was presented to the State Board of Health of New Jersey as to the healthfulness of oleomargarine, and it says: "We know of no reason why oleomargarine, made from clean

beef fat, obtained from healthy cattle, should not be deemed a proper and healthful article of food. How far its use shall extend is a question for the palate to decide.

From the above it will be seen that the opinions of scientific men agree that oleomargarine made from clean and pure fat from the beef is an healthful article of food when properly prepared.

But all these statements are based on the investigation of processes of manufacture that are now almost obsolete, and a new line of inquiry must be started every time that a manufacturer introduces new methods or begins to use other fat than that from cattle.

The impossibility of having a sanitary inspector at every factory, and the impracticability of ensuring the use of beef fat alone, in the manufacture of oleomargarine, will always militate against the popular use of the article, and so long as the purity of the substance depends solely on that elastic and fragile article, commercial honor, just so long must the unqualified endorsement of the sanitarian be withheld.

It seems hardly necessary to enter into a discussion concerning the digestibility of beef fat, or oleomargarine made therefrom, for it is well known that in this respect it is inferior to butter, which is the most digestible of all fats.

COMMERCIAL BEARINGS OF OLEOMARGARINE.

In the report presented herewith the commercial bearings of butter were thoroughly discussed, and it does not seem necessary to repeat what was there said, nor are long statistical tables relating to the trade in butter called for. The remarks made in my report show fully the extent of the trade in oleomargarine, and its effect on the price of butter. Suffice it to say that if oleomargarine was sold for exactly what it is, and at the proper prices, only the poorer and commonest grades of butter would be brought into competition with it. It is certain that the market for the choice grades of butter has not been affected by the sale of imitations and probably never will be, and it is equally certain that rancid and poor butter can never be sold when oleomargarine is obtainable. The effect of competition, then, is shown only in the demand and price of the ordinary and medium grades of dairy butter, and it may be said without fear

of contradiction that if oleomargarine is sold only for what it is, under its own name and of its own color, that the dealers and makers of good butter may never anticipate any falling off in the demand for their production. But if oleomargarine is allowed to be sold under the name of butter, of the color of butter and at butter prices, as has been the custom heretofore, it is equally certain that the dairy interests of the country will receive such a severe blow that butter production will, in course of time, become one of the lost arts.

This statement embraces the true condition of affairs; hence the dairyman is either compelled to insist on protective legislation or to abandon the production of pure butter, and then engage in competitive adulteration, a state of affairs that all good citizens should seek to avoid.

LEGAL CONSIDERATIONS.

That the people are opposed to oleomargarine is shown by the legislative enactments that their representatives have been called on to provide, and so great has been the demand for restrictive laws that twenty-nine States have statutes bearing on the subject. In Maine, Michigan, Minnesota, Wisconsin, Missouri, and Pennsylvania, the manufacture and sale of oleomargarine are prohibited. In New York and New Jersey, and perhaps in other States, the law forbids the sale of the articles made in imitation or semblance of butter. New York, New Jersey, Iowa and Connecticut provide special officers to enforce the laws bearing on imitation butter. Several States have special provisions; for instance, in New Hampshire oleomargarine may only be sold when colored pink. In Connecticut signs have to be shown where this substance is sold or used; in Massachusetts licenses to peddle are required.

Without mentioning details, however, it may be stated that nearly all the progressive and important States have restrictive legislation.

The culmination of this popular uprising against bogus butter was in the enactment of a National law by Congress, and although that body assumed the police power, conferred only on States, in passing this act, the necessity was so great that radical measures were called for.

Judicial decisions also reflect the popular opinion, and the highest courts in two States have said that prohibition, even, is constitutional, and in New York the Supreme Court has decided that the State may prohibit the sale of imitations of butter, while it is confidently expected that the sale of fat, colored in semblance of natural butter, will be declared illegal by the Courts of New York and New Jersey.

The Supreme Court of Missouri, in passing upon the constitutionality of the prohibitory law of that State, says :

" If it (oleomargarine) is of such a character that few persons will eat it, knowing its real character ; if, at the same time, it is of such a nature that it can be imposed upon the public as an article of food which is in common use, and against which there is no prejudice ; and if, in addition to this, there is probable ground for believing that the only way to prevent the public from being defrauded into the purchase of the counterfeit article for the genuine, it is to prohibit the former altogether, then we think such a prohibition may stand as a reasonable police regulation."

The Supreme Court of Pennsylvania has also decided the question of prohibition, as follows :

" In the creating a legislative department and conferring upon it the legislative power, the people must be understood to have conferred the the full and complete authority as it vests in and may be exercised by the sovereign power of any State, subject only to such restrictions as they may see fit to impose, and to the limitations which are contained in the Constitution of the United States. This act is entitled " An act for the protection of the public health, and to prevent adulteration in dairy products and fraud in the sale thereof." It cannot be doubted that the General Assembly has full power to legislate for these purposes, and that they come within the general police powers of the State, which extend to the protection of the lives, limbs, health, comfort and quiet of persons. The manufacture, sale and keeping of an article may all alike be prohibited by the Legislature if, in their judgment, the protection of the public from injury and fraud requires it. The fact that the prohibited substance may be innoxious is irrelevant. The sale of a mixture of pure milk and water has been prohibited. To hold that a prohibited article must be unwholesome, to make the act prohibiting it constitutional, would be to overthrow every law, the wisdom of which could not bear the test of scrutiny."

In the case of the People vs. Arensburgh, the Supreme Court of New York files the following opinion :

"The Legislature is the guardian of the public health, not only, but is the protector of citizens against fraud and imposition.

By Chapter 183, Laws of 1885, and amended by Chapter 458, Laws of 1885, it was enacted that no person shall manufacture, except from unadulterated milk and cream, any product in imitation or semblance of natural butter made from cream, nor shall he sell any article produced in violation of that act.

The defendant sold a product or compound in violation of this act. A dead white product of animal fat is so colored as to resemble butter. It is not sold as butter in this case, but as oleomargarine; but it was an imitation of butter, and purposely made so.

The Legislature has power to prohibit a fraud, a simulation of a healthy article of food, and one which is so universally consumed by the people.

The Court of Appeals condemned a law which prohibited the manufacture of an article designed to take the place of butter, but the court seems to make a distinction between manufacturing a compound from tallow and other fats, to take the place of butter, and the sale of the same compound so colored as to be an imitation of butter.

The case of the People vs. Kerin, First Department, N. Y., is not in conflict with this view of the statute.

In that case the accused purchased the adulteration as dairy butter, and sold it as such, believing it to be dairy butter. The case presented is one entirely different. The simulated compound is bought and sold as oleomargarine, but it is so made as to deceive, by a false color. If oleomargarine may be made, let it present no false appearance.

IS SHEEP HUSBANDRY PROFITABLE ?

By F. S. HOLCOMB.

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Sheep husbandry is like all other branches of agriculture, to be profitable to the farmers of this State it must be conducted with care and judgment, in its different branches, and if the object be the raising of lambs and wool for market, a different course must be pursued than the one a regular breeder pursues in raising stock for breeding purposes, or for breeding sheep for farmers' general use.

The question does not confine me to any particular breed, and I will, therefore, express my preference of breeds best adapted to our State, considering soil, climate, and markets, unhesitatingly to be Southdowns and their crosses. I do not say this because I am a breeder of Southdown sheep, but because it is most profitable for every farmer to breed from a thoroughbred Southdown ram, on the common ewe, such as farmers generally keep. The question of the origin of breeds in our domestic animals may be even more remote than the comparison of tongues and the establishment of nations among the human race. The first inhabitants of the earth travelled about from place to place with their flocks and herds, changing their location as subsistence became scarce or abundant. Perhaps to Jacob, the father of the children of Israel, may be accredited the first experiment in breeding, and a just recognition of a difference in the races or herds of animals. When he decided to separate from the service of Laban, his father-in-law, and they were about to divide their flocks and herds, Jacob chose for his portion all the speckled and spotted among the cattle, and all the brown among the sheep, and he instituted certain experiments, recorded in history, which had the effect to cause the young of the cattle to come spotted and ring-streaked, and the young lambs with speckled and brown faces and legs, very much to his

own aggrandizement, and very much to the dissatisfaction of Laban, his employer and father-in-law. Jacob's policy demonstrates one very important lesson to all breeders. It establishes the supremacy of art, and shows the ease with which both the color and form can be moulded to the will of man.

Whether we can safely claim for the Southdown sheep this ancient origin I will not assert positively, but the probabilities of the case seem to point that way.

Coming down to more modern dates, we find that the Southdown sheep of our times originated in England, on a long range of chalky hills called the Southdowns. On these hills a certain breed of sheep has been produced for many centuries, in greater perfection than elsewhere. It is only within the last century that they have been brought to their present high standard of perfection. As far back as 1776 they were of small size, and not superior in form to the common sheep of the country. Since that period a course of judicious breeding, pursued by John Ellman, of Sussex, for a period of fifty-five years, greatly increased the value of this breed, and it was done without any admixture of foreign blood.

The Southdown is, by nature, an upland sheep, and belongs to the middle woolled class. The average weight of the fleece has been increased since 1776 from two to four, and even six pounds of clean wool. The Southdown is raised, more particularly, for its fine mutton, for which quality it takes precedence over all others in the English markets. Its early maturity, its extreme aptitude to lay on flesh, render it particularly valuable for this purpose. It is quiet and docile in its habits, and though a good feeder shows but little disposition to rove.

About the year 1800 the Emperor of Russia paid Mr. Ellman \$1500 for two rams, to try the effect of crossing upon the more northern breeds of sheep. Jonas Webb, of Balrahan, Cambridgeshire, England, was the most successful follower of Ellman, and carried the breed to a still higher degree of perfection. Choice specimens of Ellman's Southdowns were first imported into the United States by John Hare Powell, of Philadelphia, about the year of 1830.

Samuel Thorn, of New York, imported the ram "Archbishop" from Webb's flock, in 1860. The price paid in England was

\$1,250. J. C. Taylor, of New Jersey, imported the ram "89," bred by Mr. Webb, in 1861.

The other principal importers of Southdowns to this country are Lewis G. Morris, of New York, and R. A. Alexander, of Kentucky. Since the death of Mr. Webb, Lord Walsingham seems to be taking the lead as a breeder of Southdowns in England. The specimens from his flock shown at our Centennial Exhibition certainly show that the breed is not retrograding. One sold at the Centennial sale for \$120 and came to New Jersey to find a home. This one has been very satisfactory among the breeders, the writer of this paper owning one of his get at the present time.

The principal names given by breeders in the United States are three, viz: Webb, Thorne and Taylor, of New Jersey. I well remember a sale of Taylor's in New Jersey, after the purchase of "89," when a majority of the lambs sold averaged way up in the hundreds of dollars, the lowest price paid being \$80, for one purchased by Isaac B. DeMott, of Hunterdon county, registered as "Arch," and afterwards purchased by F. S. Holcomb.

From the foregoing description of the breed we will now be the better able to judge whether it is best adapted to the soil, climate and markets of our State.

In successful sheep husbandry at least three conditions are essential :

- 1st. Location and adaptation of the farm for the business.
- 2nd. Selection of breed to accomplish the objects sought, whether mutton, wool, or both.
- 3rd. Care and skill in the management of the flock.

There are but few farms that cannot be adapted to keeping sheep. If the surface of the ground is not too wet, they will do almost anywhere. I am willing to admit that there are many farms that will pay a better return for the investment if devoted to dairying or general agriculture, but it is upon those farms which are unsuited to the purposes of grain raising or dairying that I would urge the claims of sheep husbandry. Steep hill sides, broken and new land, rocky and stony places, will generally make excellent sheep pastures, and cannot profitably be devoted to anything else, except fruit.

We have much land of this kind in New Jersey, producing

nothing but weeds and briers, which, if stocked with sheep, would contribute much to the owner's income, and to the nation's prosperity. The value of the sheep as aids to the farmer in subduing weeds and briers is not sufficiently understood or appreciated. While it is true that sheep can be kept profitably on land that cannot well be devoted to anything else it is equally true that upon good land they will pay, as well as other stock or crops, if skilfully managed, and with very much less labor to secure it. Of late years sheep farming has not been considered profitable by many farmers, and many of them have entirely abandoned it, and taken to grain raising, dairy farming, &c., as being more remunerative. It is only those who have continued this business in the right manner who have found a profit in it, and I shall endeavor to show how this is accomplished.

Situated as we are, geographically, with convenient access to the two largest cities, and best markets in the country, if sheep husbandry cannot be made profitable here, it cannot be so in any part of the country. The time when it was profitable for us to keep sheep for their wool, mainly, has gone by, and may perhaps never return. We must have an eye to the value of the flesh as an article of food, as well as the wool for clothing. In order to make a profit from sheep husbandry much of the land in our State has become too valuable to raise and keep sheep for the value of the wool only at present prices. We cannot even compete with our more northern States in profitable grain raising, and much less in wool growing, where thousands upon thousands of unenclosed acres afford luxuriant pasture which may be had for the mere taking. We must now turn our attention to the more finished products of mutton, beef, milk, butter, etc., which are more perishable in their nature and whose chief excellence consists in their freshness, and that will not bear the effects of transportation equally well with the more durable staples of grain and wool. One way by which our farmers have found sheep husbandry profitable is in raising early lambs for market in New York and Philadelphia.

The manner in which this has been done I will briefly describe for the benefit of others.

Good, strong, medium wool common ewes should be procured in July, if possible, and a young and vigorous thoroughbred

Southdown buck should be turned with them, immediately after harvest, allowing not more than twenty-five ewes to one buck, if a lamb, and not over fifty to a yearling. By this practice, the lambs will be dropped between the fifteenth of December and the fifteenth of January. If the ewes are well fed through the winter, and if the lambs have a free and separate access to corn meal, whole oats, wheat bran, and linseed meal as soon as they are old enough to eat, they will, when six weeks old, up to three months old, weigh from thirty to sixty pounds per head. I have known some farmers to sell lambs for Saint Patrick's day as high as \$12. These prices do not last long, and are obtained by but few. I know of farmers who have disposed of their lambs from forty ewes by the middle of April, bringing from \$6.50 to \$10.00 per head, averaging a little over \$8.00 per head. After the lambs are sold the ewes will fatten, and will bring a larger price than at any other time of the year, from one to two dollars more than cost. Now, estimating the gain in price, the value of the fleece, and manure, to balance the cost and trouble of keeping, the lamb can be reckoned as clear profit. If, however, the lambs are dropped later and sold for less prices, say five or six dollars each, the profit will be proportionally less, but there will be still a profit equal to the price obtained for the lamb on every ewe that raises one, and it is not unusual for a flock of ewes to average one lamb apiece. Now if a profit of from five to ten dollars a head, or averaging \$7.50 on each ewe, can be obtained it is evident that sheep husbandry can be made profitable in New Jersey. It is hardly necessary to compare sheep husbandry with grain raising in this State. It is the general opinion that raising grain to sell in the market has ceased to be profitable. We cannot compete with the West; we must send our grain to market in pork, beef, butter, mutton, &c. There is a fact worthy of mention in this connection; it is stated that in England, on farms where sheep husbandry is extensively practiced, the average yield of wheat was fifteen bushels per acre greater than on farms where sheep were not kept. So generally is this fact recognized in England that many landlords in that country have it stipulated in the articles of agreement with their tenants that a specified number of sheep are to be kept on their lands.

The testimony of many of the leading agriculturists in this

country is also in support of this fact. The old prejudices that sheep were death to the crop, and poison to the soil, does not appear to be sustained by the evidence. On the contrary, we now frequently meet the statement that sheep are necessary to increase and maintain the fertility of the soil. There is still another argument in favor of keeping sheep, and that is the labor question. The absolute impossibility, in many cases, of securing adequate help, renders dairy farming impossible for many, and exceedingly difficult for those who are engaged in it.

I think it will be safe to say that sheep farming can be carried on with one-fourth the amount of labor necessary to carry on dairy farming, and if the profits realized are not equal to those who get from seventy-five cents to one dollar a pound for their gilt edged butter, there is less labor required to secure those profits. To those who have sheep on their farms I would say retain them, and to those who have none, I would say procure a few and see if you cannot find a profit in keeping them. A few sheep can be advantageously kept upon almost any farm.

There is no land too rich for sheep husbandry, and there is no land so poor in New Jersey, that I have seen, but what will support a few sheep, and be improved in condition by it, and we have, also, much land in the State that is better adapted to sheep husbandry than the purposes to which it is now devoted. Sheep will feed upon some things that other stock will not touch. They will entirely eradicate some kinds of weeds, and what they do consume will hardly be missed at the end of the year, unless kept in too large numbers.

It is no uncommon thing for the farmer to purchase twenty ewes at five dollars apiece, making \$100 for the lot, and before the expiration of the year, sell the wool and lambs, amounting to one hundred dollars or more, making one hundred per cent. on the investment, and have the original stock on hand, worth as much as, or more, than at the time of purchase.

Of course this is not all to be set down as profit. Neither is the whole amount received for a crop of hay or grain to be considered as profit. How many farmers can tell exactly how much it cost them to produce a bushel of corn or a pound of butter. In determining the actual profit of any crop, there are many items of debit and credit to be considered before the true result

is reached. In sheep husbandry the credits come in under the head of wool, lambs, mutton, and manure, improvements of the farm, etc., etc., while the principal charges are for provender consumed, and for labor expended in their care.

I will not confine my paper to the raising of lambs and ewes only, but would mention the feeding of wethers for profit in sheep husbandry. A few years ago it was the usual custom for the farmers in my section, in addition to their ewes, to feed from twenty-five to fifty or more wethers, and when managed with proper care, they always return good profits on the investment. I have bought wethers for \$1.75 and sold them for \$3.50 in three months time, without any feeding of grain. I also, at another time, purchased fifty for \$3.75 per head, which was considered an enormous price. My neighbors thought I was crazy; I got a little scared, and let a brother-in-law take half of them. Sheep began to advance rapidly, going up to over \$5.00 for sheep very inferior to mine, and in October, just about three months from the time of purchase, I sold them for \$7.50 per head, doubling my money, without any feeding of grain, excepting their running on an old field of rye for two or three weeks. The man I sold them to bought up one or two hundred of large sheep, fed them, and sold them for Christmas mutton for \$13 apiece, making a nice profit; thus you see there is money in feeding sheep as well as in raising lambs.

I might give numerous reports of my own and others doing as well or better, but they were fed until February, thereby diminishing the profits (but making large quantities of manure).

SHELTER FOR SHEEP.

There is a great objection to underground or barn cellars for sheep, for they are apt to be damp and close, and of all domestic animals sheep require the most air, and like a dry bed best. Keep a sufficient number of feed racks out-of-doors to hold hay for the whole flock; they can be easily removed under cover for use in stormy weather. Let the sheds be so built that the flock can be housed in them from storm; but they should be well ventilated, and by all means left open in good weather.

SHEEP FIGURES.

When Congress determined to play the losing game for the sheep interest by interfering with the tariff, those who understood the influence of the change were free in the assertion that the only salvation for the wool interest would be through a sacrifice. We now understand what it means. Ohio wools that sold at forty-two cents are not higher than thirty-five cents to-day, after the reaction ; and the sacrifice so far, in Ohio alone, wholly and solely in the interest of foreign wool-growers, is 840,000 sheep and the annual wool clip of 4,200,000 pounds. The loss in Texas is twice that much, or more, and correspondingly so in other states and territories.

By reason of the increased wants of the people, the natural increase of the population, and the continued decrease of domestic wool production, we look for higher figures than now prevail, as foreign markets are boomed by American buyers ; and then the statistician will be able to show that high prices rule equally under low as under high tariffs. The politician and free trader will look at the result and proclaim aloud, "I told you so!" ignoring the great fact that the sheep interest has been almost abandoned and profitless for three years.

We rejoice at the sacrifice, as only at such a cost can a profitable basis be reached. Sheep raisers should not breed their ewes until profitable values are restored.

However meritorious any of the pure breeds may be, cross-bred sheep very often pay best for fattening, says an English authority. Half-breeds—that is, the first cross between a pure-bred ram of any improved breed and a ewe of a different breed, are very generally credited with being the best for this purpose ; and both as regards early maturity and quality of mutton and wool it generally is so.

Now to close my subject, and show to my brother farmers that sheep husbandry is profitable, and that my estimates are correct, I will give a few items in my own neighborhood in regard to lambs.

One of the members of our Pomona Grange sold four lambs about five weeks old for \$9 per head, week before last. Another sold two for \$10 per head, with several more about ready to go.

I also give you the price of mutton and lamb in Philadelphia market, as quoted in last Saturday's paper.

"Mutton is still scarce and in some markets high. Even Chicago mutton has gone up to fifteen cents per pound. There are a few winter lambs which are selling at fifteen cents per pound for fore quarters, and eighteen cents for hind quarters. Fore quarters of hot house lamb cost \$4, and the hind quarters \$5 each. The whole lamb sells for \$18."

It shows plainly to my mind that sheep husbandry is profitable. I will now give you my views how to make all other agricultural pursuits more profitable than they have been for some time. According to the last census the agriculturists have about fifty-two per cent. of the voting population in the United States. Let them throw away their party spirit, combine together, and send a majority of farmers to the National Congress, that will make laws that the people can understand; keep the lawyers and politicians at home, and then we will soon have laws to protect the raw material produced by the farmers, for I hold there is nothing manufactured in the United States but that the raw material is produced directly or indirectly by the farmers.

In the breeding of sheep I spoke of purchasing a ram from Isaac H. DeMott, who purchased a lamb at Taylor's sale for \$80. I forgot to mention the great benefits derived from the purchase of this ram to the people of Hunterdon and Mercer counties. Four of his get went to Kentucky and South Carolina to improve the stock in those States.

At another time I purchased a ewe imported from England by a Mr. Gosling, for which I paid \$100. My neighbors and friends thought I had made a mistake, but the investment proved very profitable. The first lambs dropped were twins, a buck and a ewe. I sold the buck as a breeder for \$25; I sold two ewes to a gentleman in Haddonfield, N. J., for \$50; I sold two ewes and two lambs to a gentleman at Plainfield for \$80, besides retaining a number in my own flock for the improvement of others. The ewe had twins every other year, and I kept her until she died of old age. Some small breeders of Southdowns paid me \$1.00 per head for service to "Monarch," and the cross was very profitable to them.

What I desire to impress upon the minds of farmers is that

blood will pay, for breeding purposes, as well as for the raising of lambs.

Remember that the male is one-half of your flock or your herd, and should always be a thoroughbred, possessing the qualities you desire to produce, and should be selected with great care.

CARE OF ROADS.

IS THE PRESENT SYSTEM THE BEST THAT CAN BE DEVISED, AND
IF NOT WHAT IMPROVEMENTS CAN BE SUGGESTED?

By W. M. LANNING, Esq.

CARE OF ROADS.

IS THE PRESENT SYSTEM OF CARING FOR OUR ROADS THE BEST THAT CAN BE DEvised, AND IF NOT WHAT IMPROVEMENTS CAN BE SUGGESTED ?

By W. M. LANNING, Esq.

There are now in force upon our statute books fifty-seven general acts of the Legislature relating exclusively to roads. Besides these, there is a large number of special township acts regulating the management and care of roads in the particular townships to which such acts are applicable, and various provisions in sundry general acts that directly or indirectly affect the law of roads. The fact that the Road Law is thus cut up into so many parts renders it difficult to ascertain what the *whole* law relating to roads is. A cursory reading of our statutes will, however, reveal the facts of which I shall speak.

Let us first notice the methods provided by our laws for designating the agents to whom is entrusted the care of roads. These agents are called road overseers, road commissioners, road boards, and the like. Various methods for designating or selecting them are prescribed in our laws. In some townships, the care of roads is given to overseers elected at the annual town meetings by the legal voters of the townships, in which case the voters of each township may elect (to quote the language of the law) "as many overseers of the highways as they shall deem necessary or convenient." In other townships, the voters residing within the respective road districts of such townships elect overseers at special district meetings held within such districts. In still other town-

ships, road commissioners are elected at the annual town meetings who have supervisory powers over the road overseers who are elected at special district elections. And in some townships, the office of road overseer has been abolished and the management and care of roads wholly vested in the township committee.

That provision of the Road Law which authorizes the legal voters of a township to elect, at the annual town meeting, "as many overseers of highways as they shall deem necessary or convenient," is a feature that has been continued in the law ever since the year 1798. Under the act of 1798 the voters of a township assembled between the hours of eleven and twelve in the forenoon, chose a person to preside at the town meeting, and voted *viva voce* on all questions submitted to them. They thus determined the *number* of overseers that should be elected, and then elected the number determined upon, not as overseers for particular districts, but as overseers for the township. The officers thus elected were considered in fact, as well as in law, township and not district officers, and their duty to repair particular sections of road arose only when, after their election, particular sections of road were assigned to them by the township committee. It is still the law that overseers elected at the annual town meetings are township and not district officers, and there is no authority in law for any voter, voting at a town meeting, to designate a particular man as overseer for a particular district. Yet it is probably almost a universal custom, in townships where overseers are elected at the annual town meetings, to assign to each district a number to distinguish it from other districts, and for each voter to designate upon his ballot a particular man as overseer for each particular district in the township. This custom has given rise to certain evils which should be abated. A person residing in one part of a township can have but little personal interest in the election of an overseer of a section of road in some remote part of the township, where he seldom travels. Opposing candidates for the honor of election to the exalted position of road overseer of District No. 1 in the extreme northeast corner of a township will earnestly solicit the votes of their friends who reside in District No. 20 in the extreme southwest corner of the township, and he who has the greater number of friends will win the prize. Opposing candidates in the other

districts may adopt the same method of warfare. Experience and good judgment in the working of roads are not the elements that attract to a candidate the majority of votes cast for him. Personal interest in having good roads is not the motive that prompts the majority of voters who vote for him. The result of such a custom is, that a disturbing element is hereby introduced into township elections, and that the best men are not elected overseers. Legally speaking, such officers are *township* officers; in fact, they have long been considered but *district* officers. If road overseers are to be practically considered as *district* officers, there is a manifest impropriety in providing that they shall be elected at *township* meetings.

The prevailing custom of considering road overseers as district officers, and not as township officers, has led within the last two or three decades to the enactment of a large number of special acts applicable to particular townships, authorizing such townships to be divided into districts, and providing for the election of an overseer for each district by the legal voters residing in such district. If the custom of considering overseers elected at the annual town meetings as district and not as township officers is to be adhered to (and it seems to me that it is now so firmly established that it will be adhered to), then the method adopted by these special acts authorizing the voters of districts to assemble at district meetings and elect their overseers is better than the method of electing district overseers at township meetings. But this district election method has decided disadvantages. To maintain it, the township must be geographically divided so that every voter may know in what particular district he is entitled to vote. The boundary lines may follow natural streams, but they cannot follow the middle lines of the roads, since such division would have one side of a road to be repaired by one overseer and the other side of the same road to be repaired by another overseer. It is desirable, also, that the district should, as nearly as practicable, contain equal lengths of road, and that there should not be too great a difference in the total number of voters in the several districts. To divide a township geographically into a dozen or more districts of equal area and containing equal lengths of roads, is simply impossible. To make a division approaching equality is

well nigh impossible. And the varying density of population would cause a vast difference in the number of voters in the several districts. These are the practical difficulties in the way of enforcing the district election method.

Besides the district election method established by the special township acts above alluded to, a general act was passed in 1885, authorizing but not requiring the voters of any township in the State, wherein overseers of roads have been elected at annual town meetings, to pass at any town meeting a resolution directing the election of district overseers by the voters of the respective districts. The scheme is the same as that established by the special township acts, and the same difficulties are met with in attempting to enforce it.

Another act applicable to certain counties of the State was passed as early as 1859, and still continues in force, authorizing the voters of the several townships of such counties to elect, at their annual town meetings, three commissioners of highways, who have power to lay off the townships into districts, to apportion the road taxes amongst the overseers, and in general to have supervisory powers over the overseers who, by the act, are to be elected by the tax-payers of the several road districts, at district meetings held for that purpose. An appeal is given from any apportionment of taxes made by the commissioners to the township committee. All the essential powers vested in the commissioners are, by the general road law, vested in the township committee. There seems, therefore, to be no necessity for the existence of the office of commissioner of the highways. The district election scheme adopted by the act is substantially the same as that provided by the acts already alluded to.

The impropriety of electing district overseers at township meetings, and the difficulty of enforcing the district election method, very probably account for the act of 1884, which authorizes the voters of a township at any town meeting to discontinue the office of overseer of roads and to commit the management and care of roads wholly to the township committee. This method, it seems to me, is altogether impracticable. One of the smallest townships of Mercer county has not less than forty miles of public roads. How can the township committee properly supervise the repairs to such an extent of roads? Are they,

after every heavy rain, to drive the forty miles to ascertain whether any wash-outs have occurred, and, if so, to employ men to make repairs? Are they, after every drifting storm of snow, to wallow through forty miles of it to bargain with men willing to clear out the road?

There are also certain roads in some of the counties of the State, the management and care of which are committed by law to "county public road boards" or to boards of chosen freeholders. These are county roads, and I presume should remain subject to the jurisdiction of the county authorities.

So far we have referred only to the agents upon whom the law casts the management and care of roads, the methods of electing those agents, and the defects existing in, and evils resulting from, those methods. Let us now consider briefly the *means* by which those agents are enabled to maintain and repair the public roads.

A general act concerning roads, passed by the General Assembly of the province of New Jersey in 1774, vested every road overseer with the power to call out the able bodied inhabitants of his district to work upon the roads, and enforced obedience to such call by the imposition of fines upon those who failed to respond. This method became known as the labor method. Between 1774 and 1798, a number of townships obtained special acts authorizing them to raise a road tax, which, when collected, was paid over to the road overseers, and by them expended in hiring men to work upon the roads. This method became known as the *hire* method. In 1798, the Legislature passed a new general act, prepared by Governor Patterson, repealing all special township acts that had been theretofore enacted, and providing that townships generally might adopt either the method of repairing roads by *labor* or by *hire*. In 1818 the road law was again revised, in which the methods of repairing roads, either by labor or by hire, were preserved; but as some townships which, under the prior act of 1798, had chosen to maintain their roads by hire had failed to raise a sufficient tax to enable overseers to keep their roads in a proper state of repair, an additional provision, intended to remedy this defect in the act of 1798, was inserted in the act of 1818, making it the duty of the overseer, when not supplied with sufficient funds properly to repair the roads of his district, after having expended the funds placed at his command

to resort to the *labor* method and warn out the inhabitants to work. This combined labor and hire system, perfected in 1818, is exactly the system provided by the general road law of the present time. It has never been altered, except in 1883, when the provision requiring overseers to adopt the labor method after exhausting the moneys placed in their hands, was repealed. The evil effects of the repealer were soon discovered, and in 1885 the repealer was itself repealed, and the combined labor and hire system was restored in all respects as it had existed from 1818 to 1883.

There must manifestly be some limit to the work which may be required by an overseer of the inhabitants of a district under the labor method. His discretion in summoning the inhabitants of his district to work must be reasonably exercised. If he should call the inhabitants of his district to come forth with picks, spades, shovels, plows, carts, wagons and horses, for the purpose of macadamizing or turnpiking the roads of his district, the summons would be indignantly resented as a usurpation of power, and obedience to it obstinately refused. The law casts upon townships in their corporate capacity the duty of maintaining roads, and when a public road in a township becomes in such a state of non-repair as to be unsafe for public travel, and thereby to constitute a public nuisance, the township in its corporate capacity may be indicted and punished for its neglect. As an overseer is a mere township officer and as such has, under the labor method, no greater responsibilities or duties imposed upon him than are imposed upon the township in its corporate capacity, I doubt if he can legally require of the inhabitants of his district any further work than is sufficient to put the roads in such condition as will relieve the township from liability to indictment and punishment for their non-repair. The numerous large cities now within and without our borders afford the best of markets for our agricultural products, and the interests of farmers alone (independent of other considerations) demand that they shall have easy access to those markets, and that our roads shall be improved far above the mere point where townships shall be released from liability to indictment. Therefore, the labor method of maintaining our roads, however wise it may have been in our Colonial days, is, I submit, one which we have now outgrown and which should be entirely superseded by another and better plan.

The present *hire* method of maintaining our roads is also defective. It does not even require townships to raise sufficient funds to put their roads in such a state of repair as to prevent or abate public nuisances. It simply provides that townships *may* raise by tax so much money as the voters may deem proper to be expended upon roads, and that if they do not raise enough to put the roads in proper condition, the *hire* method thus employed shall be supplemented by the *labor* method. It seems to me that as long as the hire method rests upon such a basis, it will not be likely to secure such improvement in our roads as we should have. The hire method, to be effective, should be wholly divorced from the labor method.

If the points to which I have directed your attention are in reality defects in our present Road Law, the practical question is, how can that law be improved? I offer suggestions upon this question with diffidence. I do not doubt that any alteration in the Road Law which I might suggest as appearing to me to be an improvement upon the existing law would meet with some and perhaps much opposition. It is not likely, however, that any change could be suggested by any person that would not meet with some opposition. I therefore venture to suggest—

1st. That all provisions of law authorizing the election of road overseers, either at township or district meetings, and all laws providing for the election of road commissioners, and all laws placing the management and care of roads in the hands of township committees, be abolished.

2nd. That the labor method of maintaining roads be also abolished.

3d. That all townships be required to raise at their annual town meetings a road tax, the amount to be determined by a plurality of votes cast.

4th. That within a certain number of days (say ten) after the annual town meeting, the township committee be required to meet, not for the purpose of making or attempting to make a geographical division of the township into road districts, but for the purpose of dividing the roads of the township into sections of such length as they may deem proper, and of appointing a competent supervisor for each of the sections.

5th. That the supervisors so appointed shall forthwith inspect

their respective sections of road, and report to the township committee at a subsequent meeting the condition of such sections of road, and particularly the nature of the repairs needed, and an estimate of the cost of such repairs.

6th. That the township committee shall thereupon appropriate, but not pay, the total amount of road tax among the the several supervisors, according to their judgment, being governed in their action by the nature and cost of the repairs needed in the several districts.

7th. That a certain portion (say four-fifths) of the amount appropriated to each supervisor shall be expended upon the roads prior to October first in each year, the remainder to be reserved for contingencies.

8th. That if, after the expenditure of such portion, sudden washouts or other defects should appear, rendering any road unsafe for public travel, and the amount reserved for contingencies should not be sufficient to make the needed repairs, the supervisor to call the township committee to view the damage, who, after examination, shall have power to order the supervisors to have necessary repairs made and to pay the expense thereof out of the general funds of the township, or if there be no general funds on hand, then to borrow the amount necessary and to put it in the next tax levy.

9th. That if the roads be obstructed by snow drifts, the supervisors to have the power to employ men to clear them out, without calling upon the township committee, and if the expense exceeds the reserve fund on hand, the excess to be paid out of the general funds of the township, or if necessary, out of funds borrowed by the township committee for that purpose.

10th. The road moneys to remain in the custody of the township treasurer, and to be paid out by him only on orders drawn on him by the supervisors in favor of the individual workmen, and only after such orders are approved by the township committee, which orders shall contain a detailed statement of the character of the work done, and be verified as correct by the affidavits of the supervisors or of the workmen.

11th. That in the month of February in each year (that being the month in which the annual township financial statement is required to be published) each supervisor shall render to the

township committee a report of the work done and expenses incurred for the year.

12th. That if any balances of appropriations shall remain unexpended at the end of the year, such balances shall be added to the road tax of the next ensuing year and re-appropriated with such tax among the several supervisors.

Such is a brief outline of the plan which I would suggest for the management and care of roads in townships. By adopting it, the impropriety of electing district overseers at township meetings will no longer exist; the difficulty of enforcing the district election method will be obviated; the impracticable plan of committing the care of roads wholly to the township committee will be followed by a practicable plan; and the incomplete and outgrown method of repairing roads by labor will be superseded by a method better adapted to our present wants and circumstances.

The township committee, by considering the location of the several roads, the natural character of the soil, and the nature of the implements furnished by the township for the supervisors' use, may divide the roads of the township into sections of such length as they may deem practicable. In townships where the only implements furnished to the supervisors are the plow and the ancient "scoop," the sections will need to be comparatively short; and in townships where the supervisors are furnished with one or more of the modern improved road-scrappers, the length of the several sections may be considerably increased. If experience proves that the roads of a township can be better and more economically repaired by increasing or diminishing the number of sections, the township committee can readily make a change. The appointment of supervisors by the township committee will not be an innovation as to the rights of voters, but will be simply the adoption of a feature common to our municipal governments, where common councils and boards of aldermen of cities and boroughs appoint street commissioners. Men of good judgment and experience in the working of roads will be much more likely to be selected as supervisors; the moneys of the township will be much more likely to be economically expended; and the power given to repair roads at the public expense, in all cases where necessity may require repairs

to be made, will be much more likely to secure good and passable roads the year round. The plan proposed, it seems to me, is sufficiently elastic to adapt itself to the circumstances of every township in the State, and sufficiently rigid to secure a wise and judicious expenditure of the public moneys.

The plan above proposed relates to the care of township roads *generally*. But in every township there are one or more roads traveled so much more by the public than others that public convenience would be greatly promoted by expending upon them a greater amount of money than can be done under this *general* plan. Therefore, the voters of each township might also be vested with the power to raise a special tax to be expended in graveling, stoning or otherwise improving a particular road. By raising a comparatively small special tax annually such road could be graveled, stoned, or otherwise improved by sections from year to year, until the whole of it from one end of the township to the other should become a firm and permanently improved road. It is doubtless true that if the power to raise such special tax should be given, many townships would not exercise the power. But the most densely populated and most progressive townships would be apt to do so, and these are the townships where such special improvements are most needed. By an act passed in 1885 each overseer in a township is authorized to expend not more than ten per-cent. of the road tax in permanently improving the roads of his district with broken stone or gravel. The objection to this act is that in townships having a dozen or more road districts there will be, each year, a dozen or more very short sections of road permanently improved. It is a piece-meal plan of improvement not to be commended. It is better that the permanent improvements made should be first concentrated upon the most public road needing such improvements, and when they are completed then upon another.

It may be objected that the system I have suggested for general and special improvements of roads would necessitate the imposition of heavier taxes than have been levied in the past. So far as the special improvements for particular roads is concerned, the objection would be true, inasmuch as no special taxes for permanent improvements have heretofore been levied. But as such special taxes cannot be levied except by the authority of

a majority of the legal voters of a township, I think the objection against the levying of such taxes cannot be one possessing much merit. And as to the taxes imposed for the repairs of roads *generally*, they will not necessarily be heavier under the plan proposed by me than they have been in the past, except in townships where in the past sufficient moneys have not been raised to prevent the existence of public nuisances. And in such cases it is more equitable to compel the raising of sufficient moneys to enable overseers to keep their roads above the public nuisance point—since then every taxpayer must bear his just proportion of the burden—than it is to compel the inhabitants of a township, by summons from the overseers, to work their roads above the public nuisance point, since by such method inhabitants who are not summoned will bear no part of the burden.

PREPARING VEGETABLE CROPS FOR MARKET.

By T. F. BAKER.

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Perhaps to the gardener this is one, if not the one, important feature to the success of all his energies.

We can see those around us who are successful in producing crops, both of quantity as well as in quality, which would compare favorable with others, but who in the operation of preparing for market, either neglect, or through a lack of knowledge fail to so arrange their products as to command the attention of purchasers, and through this one fault disappointment and loss is a positive result.

God in our creation has endowed each individual with his especial talent, and it depends upon how well the man is fitted for the calling he has chosen, or to what extent he has cultivated those lacking or dormant in his being, as to the achievements made in this life. Or, as Rust says: "To have ideas one must treat his mind as he does the soil; he must cultivate and fertilize it by reading and study, sow other people's ideas thickly in it if he expects a crop of ideas of his own."

The eye and ear being the two most sensitive organs in man's organization, through the medium of either the one or the other most of our acts and emotions are induced. Therefore I wish to emphasize the importance of marketing vegetables and fruit in as attractive shape and condition (especially such as are susceptible to improvements in arrangement and packing for long shipments) as the conditions will permit; while for near-by markets these conditions are entirely within the control of the man who exercises proper care, with a little of the artistic eye.

Any article of commerce which does not appear in an attractive condition rarely finds ready sale, while those which, through their

handsome appearance, or from some artistical arrangement, attract the attention of the passer-by through the medium of the eye, often find a customer at once, who it may be, (and often it is the case) had no idea or intention of making such a purchase. And the influence of these attractive displays goes still farther through the medium of the ear, by the eye witness relating to his friends what he had seen.

Take the busy throngs of people who daily file through the avenues of trade in our cities, and watch if you please. I venture the assertion that you may halt a majority by simply placing in view a crate of extra fine berries, though it may stand among hundreds of others of the same variety, packed in the usual style—and when I say extra I do not wish to infer that they must be a selection of the largest, but only those of good average size, well ripened, bright in color, picked with short stems, full quarts, berries neatly faced, with clean new boxes and crate. The dealer is alive to this feature and uses such a crate as a decoy through which he hopes to dispose of his enormous stock of trash. What is true of berries and fruits in general is also true of vegetables and nearly all moneyed crops of the farm and garden.

Like fruit, vegetables should be marketed in clean, neat, handy packages, all of which should be stenciled with the name of the grower.

If you have poor stuff to dispose of, don't let it be known as coming from your farm, but sell it for what it will bring as a stranger in the market. There is always an abundance of poor quality stuff in the market, and with most crops nothing pays better than a careful assorting of the good from the bad.

A reputation for honest packing and good quality should be acquired as soon as possible by pursuing one course of quality and packing, until market men learn that your brand is itself a guarantee of quality. Those familiar with the condition in which the majority of fruits and vegetables reach the markets can well understand why so much stress is continually put upon honest packing and good quality, in order to give reputation and value to a man's brand, and where one is compelled to consign his produce and sell through commission merchants, where stuff is sold by its appearance, or on its own merits, a reputation for honest packages and uniform quality through the brand, is

worth untold value, in selling, as well as in the enhanced value through the confidence gained through former packages handled.

Another fact often lost sight of by shippers is in making or dividing their shipments among two or more consignees in the same city, thereby increasing their own labor and all of those connected with the transportation, necessitating extra handling at both ends of the route, which is conducive of no good to the produce, and finally entails an unnecessary amount of accounts to be made and kept and all for a peculiar whim that they may realize better prices, while the fact is, had they shipped to one man in whom they had confidence, who could vouch for the quality throughout by former experience, or the purchasers who knowing your brand would purchase and pay a better price than they would for a stray brand unknown, as would be the case with yours in the hands of others.

Still another reason for your own stenciled package is obvious through the abused privileges of agents at points of shipment whose generosity allows him to furnish packages free, as believed by too many of the confiding shippers. This produce is usually shipped and sold as consigned by the agent. The individual accounts are kept by him and the commission merchant knows no one but the agent in the transaction. Remittances are made to him in a lump, and he redistributes among the shippers. This is one of the worst features connected with the commission business, and one which opens the way, and invites rascally packing, with deceptive topping and careless handling.

In correspondence with a prominent commission dealer of New York City he says: "A great many farmers make the mistake of picking their fruit and vegetables too green. I often receive berries and grapes that are half green. I would not eat them, neither would the farmer who sent them, and yet he expects a big price. I claim that fruit or vegetables well ripened will bring twenty per cent. more and am satisfied will stand up full as well in shipping." He also complains that "the quarts are not filled up in other instances and these have to stand around with the green until some cheap customer comes along and will buy them. As a result the shipper complains that he does not get as much as his neighbors, while the whole blame rests on himself."

"With tomatoes we are often obliged to hold them over for

two or three days to ripen, because we cannot sell them as they are." He concludes by citing an instance under his observation, saying he had been in the business thirty-four years and had sold all the fruit and vegetables the party raised. His father died when the party was quite young, leaving the wife and mother with a number of small children and a good mortgage on the farm. The boys went at it and supported the whole family, cleared off the mortgage and to-day own another farm, with quite an amount at interest. What was the cause of their success? Simply what lies in every man's power—having all of their fruits and vegetables put up in good order and honestly packed, raising fine produce, taking a pride in having it as good if not better than their neighbors. It has been a pleasure for me to handle their produce, which always brought good prices and gave the best of satisfaction."

His opinion of the success of the farmer is, that the man who exercises great care in getting good seeds, no matter what they cost, who is not afraid to feed his soil with manure, and when preparing for market, to put everything in first class shape, culling well and packing in good convenient packages, (new if possible, which will add more to their value than they cost) will have no fears for a dull market nor starvation prices.

I have thus far confined myself to the packing and condition in which fruit and vegetables should be preparatory to shipping, for a reasonable assurance of success.

In the preparation of vegetables for near-by markets, the same general rule is applicable, yet where one has to come in direct competition with his neighbors, and face to face with his friends in the market, his personal pride and ambition should be a sufficient incentive to induce him to display his products in the most attractive and best possible condition to command preferences and good prices, as it is only through fancy prices that we find much profit.

I will endeavor to give a few points in the preparation of vegetables, which I have gained through practice and observation, yet I fear nothing new to many of my hearers, beginning with the first crops of spring—lettuce and spinach. Lettuce requires to be handled carefully, otherwise its appearance is injured from the ragged edges of the leaves. In cutting leave at least one

inch of the root attached to the head, by which the head at all times should be handled. Remove all yellow leaves and wash by immersing in tank of water, one head in each hand, holding on to the root, which should receive a rub between the thumb and finger to remove all dirt and stain. Shake out the water and stand on inclined table to drain, face down. Pack for market by folding in the outer leaves and packing closely face down. Lettuce so treated will stand up and look fresh for a long time during hot weather; all packages should be well ventilated by boring or other device.

Spinach should be cut as near the crown of the plant as possible, if winter crop, all blistered, burnt and yellow leaves carefully removed, after which the simple washing or slushing in the tank and barrelling fits it for market.

Bunch onions or scullions should have all roots removed, as well as decayed hulls and yellow leaves, washed clean, tied in bundles to suit the market. In bunching care should be used to have the bundles of uniform size by selecting some large or some small in tying for same bunch; otherwise select and make firsts and seconds, at different price. Tie firmly, leaving as much top as possible to admit of cutting off square; in packing lay alternately tops and butts, which makes a compact package and at same time affords sufficient ventilation to avoid heat.

Rhubarb.—Nothing especial is required but neatness in bunching, making the bundles as compact as possible. This can be best done by first tying the stalks at the foot, after which take the outside leaf, arrange the others to come inside and roll to the stem, then fold over the other half of the leaf to the middle, then complete the roll, which when tied will remain firm and straight, even after becoming wilted in the market. I always wash with a hose and force pump after bunching is done.

Radishes.—The condition in which they are placed upon the market has more to do with the amount sold, and profit in their culture, than most of the vegetables of our gardens.

They should be of quick growth to be first quality, and a succession of crops coming every ten days to be strictly first-class, after which the manner in which they are placed before the purchasers has still more to do with the amount sold.

Radishes should not be permitted to wilt after taking out of

the ground, if one wishes to enjoy their crisp tenderness and aromatic flavor, which is practically unknown to most city people. After pulling, they are at once taken to a cool, shaded room, where they are bunched, putting in such a number as the market requires. With us, twelve to the bunch, of long varieties, and nine of the turnip varieties, or half long.

In bunching, we select in the beginning the smallest for the outside or first in the row, which are pressed firmly between the thumb and forefinger of the left hand with the right, continuing to place the radishes in position, making the fourth and fifth the largest in the bunch, then decrease in size to the other side, until we have eight in number in the row. Now place four more upon the top of the eight, one-third of their length back, but in the centre of the bunch, and bind firmly with two wraps of twine, and you have a flat bunch representing an open fan.

With the turnip, or half long radish, we use six in the first row and three on the top, making a very attractive appearance, and showing each radish at a glance. After they are so bunched they are at once thrown into the tank of water, there to remain until wanted to pack for market. At that time they are stacked upon a Δ shaped rack, with the roots standing out, tops next to rack. The force pump and hose are employed to wash them, and is, I think, the most effectual mode as well as the quickest, as the water coming in contact with such force, after the soaking they have had, scours every part of the dirt off, and at the same time completely rinses them under one operation. Two men can in this way wash one thousand bunches in five minutes, and do a better job than twenty men in one hour could accomplish by the old way. Radishes so tied and washed, and placed before the citizens twice a day fresh, in a city of ten thousand inhabitants, I have sold from eight hundred to one thousand bunches per day, beside my many competitors, at a price which pays a profit equal to anything I can grow.

Beets for bunching should receive similar treatment to the radish; they are put up in bunches of six, tied flat and washed with hose after tying.

Cabbage.—In preparing for market I have learned that if cut in the afternoon, after having the effects of the day's sun, one can cut with more assurance of securing nothing but hard heads,

than if cut in the morning or after a rain, when it is apparently plump and hard, but upon exposure becomes soft and worthless. Another point is not to clean the heads too close, as the outer leaves will become somewhat bruised through transit, and if left on can be quickly removed in market, leaving the head in perfect order, and full size. In packing for shipment the stem end should always face the barrel or package.

With cauliflower, the best preparation that can be given to enhance its value, after selecting nothing but good full curds, and trimming the outside leaves back say one-half, is to use tissue paper and cover each curd and snugly tucking it under the edges of the curd, between it and the leaves, which will hold it in position. This treatment should be applied in the field at such time or just before the curd is ripe, if prime stock is secured, as it will then stand for some time without discoloring by the sun but remain solid and perfectly white, which is one of its valuable qualities. Face all packages with the butts in packing.

My experience with tomatoes has been such that I would never pick for market while wet with dew or rain. In addition to the dirty and smeary appearance through handling at such a time they most invariably crack badly, and if left standing a few hours in bulk will sour and become unsaleable. Neither do I favor picking or packing during the heat of midday, as then they are usually the softest and are damaged by handling. But take the coolest part of the day when dry and you will find your stock will pack nicer, look brighter, stand transportation better, and remain in condition longer than under any other treatment.

Tomatoes are successfully shipped from Bermuda after being wrapped in paper similarly to oranges, and we find them in good condition after being off the vines a month or more. Can we profit from this experience? As a rule we handle our tomatoes too much, as we do our potatoes, which is a criminal practice even with them.

In shipping tomatoes select best specimens, leaving defective and irregular stock at home as culls. In packing face all tomatoes in the package and as compact as possible, to avoid jostling during transit.

In the preparation of celery all depends upon how well it has been grown and blanched as no after arrangement will amend for the lack of these qualities.

All green stems should be trimmed off, leaving the blanched and heart fully exposed. In trimming off the roots a knife large enough to reach one-quarter around the plant should be used so that four cuts will leave a perfect square of the root one inch in length below the crown. In washing we use the common whisk broom, holding the stalk of the celery in one hand by the root, top down, and brush with whisk and water until clean, after which it is tied in bundles of two and one-half pounds, of such a number of stalks as are required to weigh that amount.

To form a nice square bundle we use a board with pegs eight inches apart one way and ten inches the long way. Place the stalks in this form tightly (two layers usually) and tie with one string tight around the square butts, which will not injure the stalks; revolve the board and tie another string at the top. So tied and packed solid, in bulk, kept from frost but cool, the celery will remain brittle and tender for weeks.

While I have omitted many of our vegetable crops, I fear I have also been too tedious in speaking of such as are most susceptible of improvement through their preparation and packing.

BOTANY APPLIED TO AGRICULTURE.

BY PROF. J. C. ARTHUR.

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Agriculture is an art so diversified that most of the material sciences find greater or less application in its successful prosecution. At the present time no intelligent farmer needs to be told that chemistry and entomology are fundamentally and prominently associated with the advancement of his calling; but how about botany?

If we consider agriculture's twin industry, horticulture, we shall hear a great deal about hybridizing, the effect of the graft on the stock, the influence of alien pollen on the resulting fruit, the permanency of varieties, and the trustworthiness of seedmen's names. The larger fruits are well classified and described, and there is likely to be a manual of the garden vegetables sometime that will enable one to ascertain the name of any particular variety he may be growing, as the botanist turns to his Gray or Wood, and by the aid of the key, soon ascertains the name of the strange plant he has picked up in his rambles. In these and many other directions we find that botany is a well recognized aid to horticulture. Let us briefly inquire what help the science affords the cultivator of fields (leaving the gardener and orchardist out of view for the time being) and also inquire what may be expected from its development in the future.

It will be well, as a preliminary step, to ascertain the meaning at present attached to the term "botany," in order to know how much is included in the expression "botany applied to agriculture."

Doubtless some of you may have gathered early notions of the science from a study of Mrs. Lincoln's *Botany*, an excellent work in its day, or perchance of that other admirable work, prepared

by a citizen of your own State, Eaton's *Botany*. Later works of the same class, which have had great and deserved appreciation, are those of Gray and Wood, and the present state of popular botanical thought may doubtless be justly ascribed to their influence in the main. The botany of these authors was to a large extent a knowledge of the leaves, the roots, the flowers and other organs of the plant, their shapes and appearances, a suitable vocabulary for their accurate description, and the proper devices to enable one to take an unknown plant in hand, and with the aid only of his book to ferret out its name and relationship. Important and even indispensable as this form of study has been to general science, it has not yielded fruits of commanding importance when adapted to agriculture. The most serviceable American work in this vein is Darlington's *Agricultural Botany*, published in 1847, and a dozen years afterwards rechristened *American Weeds and Useful Plants*, which gives descriptions of the plants of the farm and garden. Had the botany of to-day no greater claims upon your attention than are to be found in the descriptions of the appearance and properties of cultivated plants, and had I nothing further to urge than that it is "incumbent upon the practical farmer to understand the true character of those plants which it is his especial interest either to cultivate or extirpate," as Darlington puts it, I should not have felt justified in accepting your invitation for an address.

But the botany of the present is more than names and technical descriptions, it is more than a form of intellectual furniture, and challenges the attention of the farmer more directly than through his love of aesthetics and refinement; it has, in fact, the same elements of utility that have made entomology and chemistry so important to the cultivator, and these are elements of profit and loss that touch that sensitive spot—the pocket-book.

In so far as the farmer is a producer of crops he deals with the complex conditions and relations of vegetable life. With him it is a question of securing the best yield at the least expense, and it is to his interest to consider all problems which affect the result. If we attempt to classify these problems, all those which pertain to the living plant will fall under botany, and it is in this broad sense that the term is to be understood, when I speak of "botany applied to agriculture."

In the days when agricultural chemistry was in the ascendency, it was seriously advocated that, so great was the importance of the subject, the time must come when the well informed farmer would have his small chemical laboratory stocked with suitable re-agents and apparatus in which he might test the quality of his soil and learn what particular elements it most needed for the several kinds of crops which he desired to cultivate, and in which he might settle other weighty problems of farm economy. But time has passed, and the farmer shows no more inclination than ever to add the labors of a chemist to his already multifarious duties. And, whether he fully apprehends it or not, there really is sterling sense in this refusal to turn chemist. The later developments of farm chemistry show that the problems involved are for the most part much more intricate than at first supposed, and could the amateur hope to master the difficulties of manipulation, he could scarcely expect to command the knowledge and the practice that are required to give assurance of valuable results. I might even go further and point out that the simple results of chemical manipulation are in most cases not all that is wanted; they must be interpreted, and their bearing on practice clearly pointed out. This is really a most difficult part of the work, and only the trained investigator can be expected to be successful at it.

But the farmer has done better—or it would be more accurate to say, is doing better—than to attempt to set up for a private chemist; he has familiarized himself with the elementary principles of the science, so that he is able to understand in most cases what the real investigator has to say, and is often able and willing to reduce the results to practice, and coin from the bul-
lion of science the dollars of personal wealth.

What I have said of chemistry and the relations of chemist and farmer, is equally applicable to the less familiar theme of botany. There is no likelihood that farmers as such will ever become botanists, and really there is no need of making the attempt; but it is of the highest importance that the farmer should make himself sufficiently familiar with the outlines of botanical thought to be able to grasp and apply practical deductions from the science. He may never know the Latin name of a single weed, but ought to be able to distinguish between a Can-

ada thistle and the harmless meadow thistle, or between the dangerous poison ivy and the ornamental Virginia creeper. He may never be able to adjust the focus of a microscope, but should know that the object of the instrument is not to make things look big, but to render them distinct; one does not long to have a cat appear as large as an elephant in order to see it well. He may not fully comprehend the relation of the different parts of the vegetable cell, but should know the difference between the inert and lifeless sap and the living protoplasm, and the very diverse functions of the two. A fungus may be something of a mystery to him, but it should not be confused with the injuries due to heat and cold, or other physical influences.

This power to understand without the power to originate finds its application in every department of life. We read a novel by Howells and appreciate his delineation of character, his subtle refinement of the commonplace, and may even venture a suggestion regarding the arrangement of the plot, and yet probably not one of us could write anything to compare with it. We stand before a painting, and if we have given some attention to art, may be able to criticise it with justice, although we never have touched brush to canvas. It is in this way that the farmer should be familiar with botany—he should be a connoisseur, a botanical critic, an appreciator of the science and its results, at least in so far as they pertain to his interests.

The growth of science is slow. With much toil and expenditure of time the scientist ascertains a new truth. There being no copyright or patent law for his protection, the idea is shortly public property, and no one inquires how it came to be known. For this reason the improvements in tillage derived from a better understanding of the plant, which have come about so gradually, and yet have wrought such material advancement, are not always referred to their legitimate sources, and the credit placed where it should be—the laboratory of the botanist.

The relationship of plants has been long and substantially determined. Everyone knows that corn is one of the grasses, and that buckwheat, instead of being a true wheat, is not a very distant cousin of the smartweeds. The family resemblance is often quite marked, even when the habits and properties are diverse; thus the potato and the wild climbing nightshade have

a look in the foliage and flower which the careful observer would ascribe to kinship. Knowing that these are indeed members of the same genus, it is easy to account for the poison which now and then develops in poorly grown potatoes—it is a family characteristic. The ability to detect these surface resemblances, which often have a deep and far-reaching significance, may sometimes stand the farmer in good stead, when he has to deal with an unfamiliar crop, or newly introduced weed.

The laws of the hybridity and inter-crossing of varieties are of later discovery, but are well enough understood to be of great aid in originating new forms that shall surpass the old in some desirable quality. In connection with work of this kind, the effect upon the offspring of vigor and health in the parents, or the lack of it, must receive attention. Here opens up the intricate theme of the transmission of energy, and the relative powers of the male and female in impressing their characteristics upon the progeny. The teachings of both practice and theory may well be consulted thoroughly when the farmer desires to originate a rust-proof wheat, a variety of oats that shall ripen some days earlier than those at present cultivated, or a corn that shall give a larger and surer yield.

The exact process by which the formative germ of one parent is impregnated and vitalized by the fertilizing element of the other parent, its physiology, its histology, its physics, which seem almost transcendental, all form parts of an extensive problem whose full solution, if we are so fortunate as ever to reach it, will have important bearing upon the farmer's interests in placing the control of the specific nature of his crops more thoroughly in his own hands.

A knowledge of the main facts relating to the microscopic structure of plants will save one from many erroneous practices, and keep him from entertaining preposterous notions. The forms of the cells, and the nature and functions of their contents, are pretty well known to the scientist, and should become a part of everyday knowledge to a far greater extent than occurs at present. The purely structural features form the foundation or preparation for an understanding of that large mass of knowledge which may be grouped under the general term of nutrition.

The physiology of plants is undoubtedly the most important

part of botany to the cultivator. As the doctrine of nutrition and assimilation has taken form by slow accretion, the modes of cultivation, and the methods of supplying all the necessary nutriment for the plant, have altered to conform with the more complete understanding of the plant's needs. The simplest problem was to ascertain how the plant is supplied with water, by what means the water is raised and distributed throughout the plant, the conditions which control its evaporation, and especially the part which it performs in the plant's economy.

A misinterpretation of the nature of the root-cap, which occurred in this connection, furnishes a good illustration of the pertinacity of erroneous ideas. Observing that the tips of the roots had a different structure from the parts behind, it was explained that their office was to suck in water from the soil, and they accordingly took the name of spongioles. Although it has been several decades since it was fully established that the tips do not absorb water, but act as cushions to protect the tender tissues of the advancing root, yet the name still lingers in agricultural writings, and always with the old fallacious application.

Then there is the more recent mistake of the flow of sap in up and down currents. But the agricultural writers may well be excused for being behind the times regarding this matter, for the botanists themselves, although fully aware that the water moves in the plant by diffusion and not by flowing currents, are by no means agreed just what retarding or accelerating influences the several tissues of the bark and wood exert on the process.

The recent developments regarding the role of protoplasm, the exclusively living part of the plant, which was discovered but forty years ago, have in many ways modified our ideas of the transformation which converts the crude food material taken in by the roots into the starch, sugar, fiber, and other parts of the plant structure, as well as of the nature of growth and multiplication of oranges. But although of the gravest importance for a thorough understanding of the vital processes carried on within the plant, it would consume too much time to treat of the matter further.

Probably no feature of plant economy has absorbed the attention of the cultivator more fully than the kinds of food which best promote the growth of the several sorts of field crops. The

subject is almost as much chemical as botanical, and the chemists have always taken the lead in investigations of this character; yet there is enough work for both. It is often a decided advantage to look at a problem from different standpoints, and while it may seem to the unscientific much like tweedle-dee and tweedle-dum, yet there can be no question that the chemico-botanical treatment of the problem will give results which will be to some extent different and supplementary to the botanico-chemical treatment of it, and the two taken together will be more complete than either alone. The fertilizer interests, with their large investments of capital, the commerce which has sprung up as a necessary concomitant, and the control stations—the forerunners of the more comprehensive experiment stations—all owe their origin and successful development to a marked degree to the growth of knowledge regarding plant nutrition. As the plant lives upon inorganic elements, for the most part, the study of its food is largely a subject for pure chemistry. But in the case of nitrogen, very recent investigations show that the thread of inquiry takes us again into botany, for it is fairly well demonstrated that nitrification in the soil is brought about by the agency of vegetable germs, or microbes, that may be grown in artificial media, and their life history and activity determined.

The new science of bacteriology deals with such minute bodies that we find it difficult to appreciate their real relation to the rest of animate nature. But even if individual bacteria are the smallest of living things, their importance in the economy of nature is commensurately great. In the one item alone of supplying nitrogen to plants, they merit extensive study by those who are working in the field of agricultural science. This department of knowledge, however, is but in its infancy, and it will doubtless be found applicable in directions of which we now know little or nothing.

But if the farmer has mastered the needs of his crops and the means of supplying them, if he has sufficiently familiarized himself with the structure and development of the plant to intelligently follow the discoveries of the investigator and to direct his own efforts at improved methods of culture, he has still one great lesson to learn coming within the domain of botany—he must know how to fight the host of fungus parasites which enter his

fields, and in the shape of rusts, smuts, molds, and rots, levy a heavy tax upon his well directed efforts. As these foes are in large part microscopic, and have ways of growth and reproduction quite unlike those of higher plants, a knowledge of their nature and habits diffuses itself slowly among those who do not give them special attention.

But if the advancement of knowledge is slow, it is sure. Necessity lends a strong impulse to improvement. The causes which impel the Eastern farmer to carefully gather and store his straw and cornstalks, and is gradually bringing the Western man to do the same, although he now scatters them to the wind, will eventually compel attention to improved methods of counteracting the losses from fungus parasites. If you ask what these methods are to consist in, the answer must be that many of them are yet to be discovered. In the case of smut in oats, estimates based upon actual computation in the field have placed the loss, under average circumstances, at about ten per cent. of the possible crop. As the total yield of oats in the United States in 1879 is given at over four hundred millions of bushels it will be seen that the actual loss in the country is by no means insignificant. This loss can be readily prevented by soaking the seed in a solution of sulphate of copper for some hours before sowing. Here we have a case of preventable loss, which really is very great, and yet one which in general is supposed to be so small as to be unimportant. This evidently arises from the inconspicuousness of the smutted heads and the lack of keen observation.

The case well illustrates the need of more popular knowledge regarding this class of plant maladies. There are not many fungus disorders which yield so readily to preventive treatment as the smut of oat; even so close a relative as corn smut baffles all attempts at controlling it, and its study is beset with special difficulties, for up to the present time so simple a matter as the way in which the fungus gains entrance to the corn plant has not been found out, although several investigators have attempted its solution.

Having now touched upon some of the points wherein botany comes to the assistance of the agriculturist, I desire to say a word on the necessity for giving aid to botanical research. For much of our knowledge regarding the physiology and pathology

of plants we are indebted to German investigators, and of late years especially to German experiment stations. The rise of agricultural colleges and experiment stations in this country, although still in their infancy and in some cases under imperfect management, has awakened thought upon the subject of scientific investigations for the benefit of the agriculturist. In the advancement which is surely to come, there is some danger that the botanist's part will be overlooked on account of inadequate appreciation of his true field of research, although the importance of botany entitles it to go hand in hand with chemistry; according to present views one could scarcely commend it more highly.

For the successful prosecution of his work the botanical investigator needs to be supplied with laboratories, and with apparatus of which much is necessarily expensive, also to have an opportunity to test his results in field culture. The topics for investigation are various, such as the definition, description and classification of varieties, to give precision to the nomenclature of crops, and save the cultivator from being imposed upon with old varieties under new names, an important work which has yet barely been begun; the study of forage plants, their adaptation to soil and to feeding, and the introduction of new kinds; the origination of improved varieties; the study of the best conditions for the plant's full development, including its relation to the air, the soil, the climate, etc.; the vast field of plant diseases—the topics are endless, and their importance to practical agriculture incalculable. Let the farmer see to it that proper provision be made in some way for their solution.

OUR EXPERIMENT STATION,
ITS PAST, PRESENT AND PROSPECTIVE WORK.
BY DR. A. T. NEALE.

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BY DR. A. T. NEALE, CHEMIST, NEW JERSEY EXPERIMENT STATION, NEW
BRUNSWICK.

The topic assigned me by the Executive Committee of this Board is "The New Jersey Agricultural Experiment Station, its past, present and prospective work."

In 1874 the Governor of Connecticut signed the bill which established the first Agricultural Experiment Station in this country. This bill was intended to offer its advocates an opportunity to prove that an Experiment Station would be a benefit to the farming community.

The appropriation was very small—*twenty-eight hundred dollars only*. It was stipulated, moreover, that this amount should be used solely for salaries; working expenses were to be paid from the private purse of Mr. Orange Judd, at that time proprietor of the *American Agriculturist*.

Prof. S. W. Johnson, whose work during many years previous had paved the way to this station, found that his health would not allow him to enter actively into the work of development; consequently his pupil, Prof. W. O. Atwater, accepted the position of director without pecuniary compensation.

Under his management the utility of this station was clearly demonstrated, and at the end of two years its appropriation was largely increased. Meanwhile Prof. Johnson's health had been restored; the duties of the director then naturally fell upon his shoulders and the Connecticut Station was reorganized upon its present basis, without however undergoing any noticeable changes in its policy or line of work.

In 1877 the North Carolina Station was established, its work at first being almost identical with that already found to be acceptable to New England farmers.

In March, 1880, the Legislature of this State passed the bill founding our Station and defining its duties to be the promotion of scientific and practical agriculture, as well as the development of unimproved lands.

As was perfectly natural, the executive officers of this Station were influenced by the successful work of the older institutions, and consequently the mold in which the Connecticut and North Carolina Stations had been cast was borrowed and used in New Jersey, its use being properly acknowledged in our first annual report.

The demand at this time was :

1st. For practical work.

2nd. For necessary work which farmers could neither do themselves nor afford to pay for personally.

3rd. For work equally valuable to all sections of the State.

The available funds permitted the equipment of a laboratory, in which analyses of fertilizers, fodders and feeds could be made, and data thereby secured for properly answering questions relating to the quality and use of those products.

This work fulfills all of the above conditions. It is practical, it is work which farmers can neither do nor afford to have done at private expense, and it is equally useful to all sections of the State. The demands for it have steadily increased, and the questions involved have been more and more sharply defined.

The details of the first six years have been recorded in annual reports and frequent bulletins, and may therefore be assumed to be within easy reach. A portion of the seventh year's work has also been already published, and all of it will soon appear in its lawful form. In describing the development of this station, it will therefore be my aim to avoid details as much as possible.

The records show that this station may be regarded as a *detective*, as a *teacher*, and as an *investigator*.

THE STATION AS A DETECTIVE.

At first it was evident that many of our farmers desired detective work principally, frauds in fertilizers, in particular, being the

field which station officials were specially desired to investigate. These frauds were sometimes of one kind, sometimes of another. Now and then the guaranteed analysis of a brand was practically kept, but such exorbitant charges were made for it, that the intent to take an unfair advantage of the consumer's lack of information seemed almost apparent. Generally, however, the fraud consisted in overcharging and at the same time breaking the guarantees, entailing thereby a loss to consumers in two directions.

1st. In their failure to receive a return for their money.

2nd. In losing the crop which the missing plant food might have saved.

The State laws regulating the sale of fertilizers recognize only the question of delivering a product of guaranteed quality and provides penalties for failure to keep such guarantees.

During the last three years the Station has published and circulated widely the guaranteed analysis of every brand of complete fertilizers which it has been able to secure in this State. It has also published its own analysis of these brands, side by side with the manufacturer's guarantees; giving consumers every opportunity to see for themselves which dealers invariably made good their promises.

The gradual development of this work is interesting. In 1880 twenty-four samples only of complete fertilizers were secured. In successive years the number steadily increased, being as follows: Forty in 1881, forty-seven in 1882, sixty-two in 1883, seventy-six in 1884, one hundred and seven in 1885, and one hundred and forty-eight in 1886. The rapid increase in '84, '85 and '86 was due to the efficient work of prominent farmers in many sections of the State, who made it their business to act as Station agents and personally sample all brands sold in their districts. The names of these gentlemen are published in the bulletins and reports, and are guarantees of the thoroughness with which this work has been done.

The result has been that great care is now exercised by manufacturers to secure a good reputation for keeping guarantees. As the last bulletin shows, many succeed in doing this, while some, evidently more through carelessness than by design, deliver excessive amounts of one ingredient at the expense of some other

element. A relatively small number, four per cent. only, failed last year in all respects to keep their pledges.

THE STATION AS A TEACHER.

A very large amount of work is done which finds no place in published reports, but still exerts marked influence upon individual farmers. This consists in answering by mail all sorts of inquiries regarding agricultural work.

Certain definite lines of instruction have however been steadily followed by the Station ever since its organization. These lines include—

1. Publications regarding the sources and quality of the crude stock used by fertilizer manufacturers.
2. Statements relating to their market value.
3. Plans of field trials for studying their agricultural values.
4. The chemical composition of various fodders and feeds.
5. The practical use which farmers may make of fodder and feed analysis.

THE SOURCES AND QUALITY OF CRUDE STOCK.

Years ago "patent" fertilizers were regarded by farmers as mysterious products, sometimes valuable and sometimes worthless. Traces of this air of mystery are at times still visible. As a rule, however, New Jersey farmers can now talk quite as understandingly about muriate of potash, kainit, nitrate of soda, sulphate of ammonia, &c., as they can about wood, ashes, barn yard manure and similar familiar products. The Station's bulletins and reports have explained the sources of these supplies—the modes of preparation employed, their chemical composition and the proportions in which they must be mixed in order to make the so-called patent or complete fertilizer.

In this line, too, the study of the Station's development is of interest.

The first annual report contains a single sample only of crude stock, all demands at that time being apparently for detective work. In 1881 fifty samples were analyzed; in 1882, fifty-six; in 1883, eighty-two; in 1884, seventy-five; in 1885, eighty-three; in 1886, one hundred and twenty.

Farmers who have read these reports know perfectly well how much potash there is in the muriate, how much in kainit and how much in the ordinary sulphate. They know the percentage of nitrogen in commercial sulphate of ammonia and nitrate of soda and can compare the different brands of acid phosphates in order to determine which carries most available phosphoric acid. This study of course naturally involves a discussion of commercial valuations.

THE COMMERCIAL VALUE OF FERTILIZERS.

An analysis shows simply the number of pounds of potash, nitrogen or phosphoric acid present in one hundred pounds of a fertilizer. This is useful but is not sufficient for practical purposes; such analysis must be supplemented by information regarding the commercial value or market prices of a pound of each of these elements.

This demand has been supplied by schedules of valuations published early each spring by several of the eastern experiment stations. Such schedules having been accompanied in the past by statements and examples, showing how consumers can calculate for themselves a fair market price for any brand, before purchasing it. This work has evidently borne fruit, for letters now on file at the Station relate how farmers have refused to purchase for themselves, and have saved neighbors from financial loss by proving that a certain brand, even if it were as good as its guarantee demands, could not be worth one-half of the price asked for it.

It is but natural that a weapon of this kind in a farmer's hand should be regarded with decided suspicion by traveling salesmen, and that efforts of all kinds should be made to dull its edge, or better still, put it in some safe place, where no accidents can be caused by it. It is, however, greatly to the credit of several reputable manufacturers that they have recently, in public print and in private letters, taken their stand with many of the farmers' clubs in this State in insisting that schedules of prices shall be prepared and used by the stations, claiming only the justice of such modification as can result only in mutual benefit to consumers and producers.

The history of the development of these schedules in this

State can be briefly written. In 1880 and 1881 the price lists compiled by Prof. Johnson were used. In 1882 this Station had accumulated considerable information, both from its analyses of crude stock, and from its study of retail prices, drawn direct from the offices of the principal manufacturers. The weekly wholesale quotations of prices published by a trade journal, the *Oil, Paint and Drug Reporter*, of New York City, also afforded a large amount of very valuable data.

This Station's information was compared with that secured by the stations of Massachusetts and Connecticut, and a schedule was adopted to be used in these three States during the season of 1883. In 1884 a similar course was followed. During this year the use made of the schedules and the comparisons drawn by farmers from the published bulletins, began to be felt by the trade.

It was claimed that the estimated values were misunderstood—that farmers thought that when the Station estimated the commercial value of a brand at \$40, it guaranteed a return of \$40 at least to the consumer. Farmers know well enough that when corn is quoted at forty-five cents a bushel no one guarantees that forty-five cents worth of pork or milk or beef will certainly be produced from it. In the hands of a man who knows that he needs this corn, and also knows how to use it to the best advantage, the forty-five cents will doubtless be recovered with a high rate of interest on the investment. So with fertilizers, a brand valued by the Station at \$40 may be used by one man and never return him the amount invested; the same fertilizer used by a neighbor may pay for itself and yield a satisfactory profit at the close of the first season. The Station simply says that the market price of that brand should be approximately \$40. Its agricultural value to the farmer will depend largely upon his own skill and business ability.

In 1885 it was, however, decided that a more definite schedule should be prepared, and after due consideration the stations of Connecticut, Massachusetts and New Jersey decided to publish a list which should give the value of a pound of nitrogen, of phosphoric acid, and of potash, in crude stocks, leaving out of the consideration the cost of mixing these materials into complete manures and of preparing this product for shipment. Schedules prepared upon this plan

have been used for two years. When these prices have been applied to complete fertilizers the result has been, estimated values several dollars lower than the retail prices which are charged even by the leading manufacturers. These differences simply indicate the cost of mixing and bagging complete fertilizers and show whether it would be more profitable for consumers to mix crude stock for their own use than to buy it already mixed.

This kind of schedule was warmly praised at first by one or two manufacturers and several of the farmers' clubs in the State have, by vote, signified their desire that it shall be continued without modification. One or two thoughtful men have suggested that this plan should be supplemented by learning what it costs to mix and bag fertilizers and adding this amount to the estimated value of the plant food present. For instance, if \$35 is found to be the market value of the plant food contained in a ton of fertilizer, publish that fact, but in the adjoining column of the table indicate that it costs three or four dollars additional to mix this food and bag it for shipment, making the ton ready for use stand the producer at \$38 or \$39. This suggestion is certainly worthy of consideration.

Still working as a teacher the Station has furnished

PLANS OF FIELD TRIALS FOR STUDYING THE AGRICULTURAL VALUES OF FERTILIZERS.

After a farmer has learned what fertilizers are made from, and knows how to protect himself from losses in purchasing them, he has still in very many cases to learn how to select and use them profitably. Field trials, personally conducted, will probably afford him the most reliable information on this point.

Wherever the Station has been able to find men interested in this work, it has entered into an agreement in which it promises to furnish a plan for the experiment and the necessary fertilizers. It stipulated in addition to pay a small fee, in return for which the farmer on his side promises to isolate for four years one acre of his farm upon which the experiment is to be conducted. He promises further to plough, plant, cultivate and harvest the crops from this acre to the best of his ability and to report the results promptly in writing to the director of this Station. A number of such trials have been under observation for four years, the

same fertilizers having been used annually upon corn, oats, wheat and grass. Summaries of the results will be printed in the next report.

In several cases good reasons have caused an experiment to be abandoned after two or three years work ; in one such case, however, the farmer recently stated, with considerable quiet satisfaction, that he had learned what to buy and had recovered all that he had invested in fertilizers, with at least twenty-five per cent. interest upon the investment.

This line of work is the most promising now in progress and it is hoped that in due season it will be considerably extended.

THE CHEMICAL COMPOSITION OF FODDERS AND FEEDS.

This is another field in which this station has acted as teacher.

A chemist can separate a fodder or feed into five distinct classes of compounds. If he burns it the well-known *ash* is left, all of which has been taken from the soil by the plant ; it is made up largely of potash, phosphoric acid, lime, &c. The oily matter can also be thoroughly separated from the rest of the plant and is called *crude fat*. Methods are known for isolating the material from which paper is made ; this material is called *crude fiber*. The well-known compounds starch and sugar, which with a number of similar bodies are grouped as *carbohydrates* can also be easily isolated. The fifth class is called *crude proteine* ; it includes all of the nitrogenous compounds in a plant and is used in the bodies of herbivorous animals as lean meat, cheese, &c., is used in the human body.

No plant grows without containing compounds which represent each and every one of these classes. The amounts of these compounds vary widely in different plants, rye straw, for instance, containing forty per cent. of crude fiber and therefore is an excellent material for paper makers. Cotton seed and linseed meal on the other hand may contain forty per cent. of crude proteine and therefore be sought particularly for food. Rye straw, however, does not always contain the same amount of crude fiber ; its composition depends upon many conditions, varying with soil, climate, and dates of harvesting. The same thing is true of every other fodder and feed.

Chemists of experiment stations are constantly aiming to deter-

mine the average composition of plants at all stages of growth and under all conditions liable to exist. All of our reports contain such analyses but the one for 1885 shows that a special effort was made that year to determine the average composition of feeds only, in the condition in which they are found upon our market. One hundred and eighteen samples were obtained from all sections of the State and analyzed, tabulated, averaged and compared with the results of similar work in this country and in Europe. This year eighty-five samples of *fodders only* have been secured in a similar manner; their analyses will be published in the annual report.

WHAT PRACTICAL USE CAN BE MADE OF THIS ANALYSIS.

The solid excrements from animals consist principally of undigested food, and like fodders and feeds, the excrements may be separated into the five classes, viz; crude fat, crude fiber, crude proteine, carbohydrates, and ash.

A comparison of the weight and analysis of the food eaten with the weight and analysis of the excrement voided will therefore give accurately the amount of proteine, fat and carbohydrates digested. Such trials have been frequently made and the results repeatedly obtained which show that a cow, for instance, utilizes daily two and one-half pounds of proteine, four-tenths lbs. fat and thirteen lbs. of carbohydrates in the production of a normal flow of milk. It has further been shown that the proteine and fat may be taken either from bran, from linseed or cotton seed meal, while the carbohydrates can be drawn from cornstalks or straw. Thus waste products from the flour mill and oil work, if properly mixed with waste products from the farms, can be substituted for hay and corn meal, and economically manufactured into meat and milk. This is the practical use which farmers may make of feed and fodder analysis.

The history of the development of the theories of stock-feeding and practical illustrations of the effects of calculated rations, have been published by the Station in several reports, especially in that for the year 1885.

THE STATION AS AN INVESTIGATOR.

Thus far the Station has been regarded as a detective and as a teacher. It remains to examine its work as an investigator.

An investigator is supposed to study new subjects, develop new processes and untangle and explain knotty questions. The Station's work in this field has been limited, not because of a lack, either of question or of inclination for this duty, but solely because of the excessive demands made upon it for work lying in the field of the detective and teacher.

Time has been found however—

1st. To investigate questions relating to ensilage.

2d. To study the fitness of certain sections of this State for sorghum and the possibility of successfully using this plant for sugar making.

3d. To examine the fairness of our State fertilizer law, which practically prohibits the use of certain forms of phosphoric acid.

ENSILAGE.

When the excitement over ensilage was at its height it was deemed advisable for the Station to carefully test some of the claims made by enthusiastic advocates of this process. An experiment was therefore carried out—

1st. To determine the relative losses of food, which occur when corn fodder is preserved in silos and in stacks.

2d. To ascertain the value for milk production of dried corn fodder compared with corn ensilage.

The results, briefly expressed, were—

1st. That the losses of food incidental to each method were practically identical.

2nd. When the rations contained the same amount of digestible food, ensilage, in the majority of cases, had no more influence on milk yields than dried fodder corn.

Later a more elaborate experiment was devised to compare a field corn crop, including stalks and ears, with a crop of ensilaged fodder corn.

The result was—

In *quality* the digestible food in corn meal, dried corn stalks and ensilaged fodder corn was of equal value for milk production.

In *quantity* of digestible food and in the expense incurred in gathering and preserving it the balance was, at that time, decidedly in favor of the field corn.

Detailed accounts of the above experiments are published in reports for 1882, 1883, and 1884.

SORGHUM.

One duty, prescribed by the law which founded our Station, is the development of unimproved lands.

The attempt made by a company of Philadelphia capitalists to establish a sugar plantation in Cape May county offered an opportunity to study the fitness of the soil of that portion of the State for this crop, the late falls in this county being very favorable for the sugar industry.

Field experiments devised by the Station have shown that more than twenty tons of rich cane can be grown per acre upon that plantation. Hard work has also been done to overcome the obstacles in the way of extracting the sugar from this crop, and of securing it in merchantable form. This work, during the past season, has resulted successfully and a ton of stripped and topped cane has been made to yield eighty-five pounds of raw sugar and ten gallons of molasses, this cane, too, being poorer in sugar than that of any previous crop.

All details of this work are now ready for publication in bulletin XLI, which will be mailed within two or three days.

THE STATE FERTILIZER LAW.

The latest question forced upon the station is: The fairness of our fertilizer law, which practically forbids the sale of certain forms of phosphoric acid in this State. This law was passed in 1874 and provides that the chemist shall determine, *that portion of phosphoric acid which is soluble in distilled water; that portion which dissolves in neutral solutions of citrate of ammonia at a temperature not exceeding one hundred degrees Fahrenheit, and that portion which is insoluble in both of the above named fluids.*

The phosphoric acid which dissolves in water, and that which dissolves in citrate of ammonia at one hundred degrees Fahrenheit, has been found again and again to be practically of the same agricultural value. Claims have, however, been made that the temperature of the solution of citrate of ammonia should be raised to one hundred and fifty degrees Fahrenheit. By this

means a larger amount of phosphoric can be dissolved and the value of the super-phosphate, to the producer, materially increased. The change in the method has been adopted in all States save New Jersey and pressure has been exerted to cause our State to follow this example.

In studying this question a phosphate, known as phosphoral, was secured, which yields less than *five per cent.* of so called "available" phosphoric acid when analyzed according to our State law, but yields more than *thirty per cent.* of "available" phosphoric acid when examined according to the method adopted in other States; this method being simply to work at one hundred and fifty degrees Fahrenheit, instead of at one hundred degrees Fahrenheit.

Field trials have therefore been made and several are still in progress, to determine whether the phosphoric acid in phosphoral is assimilated by growing crops. Some trials have indicated that it is valuable, others show that it is not, and all indications point to the fact that it is best to study this matter closely and allow the State law to remain unchanged, at least for the present.

I have endeavored to show that our Station has been a *detective*, a *teacher* and an *investigator*. In doing this I have briefly told the story of its past and present. To closely follow my topic I am now bound to speak of its prospective work.

I know that many men think that experiment stations should work as investigators only, leaving the work of teacher to agricultural colleges and schools, and passing detective duties over to proper officers of the law. Theoretically I too entertain this view; practically, however, I know that it will probably be years before this can be done. It seems to me, therefore, that in the immediate future our work will resemble that of the present and the past. Any well digested question, involving the interests of the agricultural public, will be carefully examined and if possible thoroughly investigated.

THE ENGLISH SPARROW.

By WILLIAM R. WARD.

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The European sparrow, or house sparrow (*fringilla domestica*) is found throughout all the Eastern continent, particularly in the northern countries, eastward into Siberia, and southward to the north of Africa and of India.

In its approaches to man it has but little timidity, and we find it equally at home in our large cities and in the quietude of the country.

I will notice some of the prominent characteristics in its life. It is inconveniently familiar—selecting for its nest and home our ivy-covered churches, and our vine-covered porticos, under the eaves of our houses, over window caps, behind blinds, and driving out from every bird house and tree crotch our loved and familiar friends, the blue bird, wren, phebe, robin and cat bird, by whom these places have been occupied for years. These places of abode are used for the several broods that are produced in succession during the breeding season, which is prolonged over the entire summer.

While living in such close proximity to our homes, their incessant and monotonous notes are fatiguing to the ear. Its pugilistic characteristics are very prominent, and we might admire their persistency in their effort to conquer one another by open bill to bill exhibitions, upon our highways, were it not that their experience in family feuds only leads to conquering and to conquer the other birds—driving them from our gardens and fields, where they are so much needed. We have all noticed the withdrawal of our familiar birds, as the sparrows have appeared, therefore we have “enter sparrow, exit other birds.”

Twenty odd years ago quite a large number of these birds were

imported and set free in Central Park, New York, with the anticipation that as they increased in numbers, and familiarized themselves with their surroundings, they would live upon the insect and their larvæ which infested the shade trees. It was hoped that they would destroy, or if not destroy diminish, the insects which were injuring these trees.

They did not at this time stay in the park, but having their own way left in a body and settled in Jersey City and Hoboken, where as early as the year 1865 they were quite numerous. From there, and from this time, they spread and increased with marvellous rapidity, until now they can be found in many of our Eastern, Middle, Southern and Western States.

The importers of these birds evidently closed their eyes to the popular feeling against them in European cities, for at this very time, or soon after, their ravages were so great upon the grain interests of Europe that a bounty was offered for their destruction.

It is to be supposed that those who imported these birds were ignorant of their habits and their most favorite diet, presuming that they subsisted largely upon insects.

Our present prejudice against the sparrow is justly founded. We have paid dearly for the experience we have had and the lesson taught us is that the insect is little sought after and destroyed, but that great damage is done to our ripening grain and seeds, and many first buds are destroyed.

Dr. Isaac P. Trimble, of Newark, in the year 1866, said before the Farmers' Club of New York: "The English sparrow differs from our other sparrows, being larger and more greedy, but he is not an insect-eating bird by nature. He will eat insects when he cannot get seed, but not all kinds of insects or worms. He is fond of millers and devours many kinds that are injurious to trees, but the big hairy and tufted worms he does not like. They have been found very effective in ridding our city parks of the measuring worm, but this pest was also assailed by another enemy, a parasite that kills him by the million. As an insect eater the yellow-billed cuckoo is worth a dozen sparrows, for he will eat the most hairy worms and mischievous insects, but he is shy and suspicious in his habits. For my part I do not think we should displace all our native songsters

in favor of a European bird. We have killed and driven away our feathered friends, many of whom are better protectors of fruit than the English sparrow. Our ends can be as well gained by cultivating and protecting the birds we have as by importation."

The *Indiana Farmer* writes: "With much trouble we succeeded in driving the sparrows from our cornice, where they had made their roosts. They betook themselves to the thick shade of a box elder tree that stood near by, and found a comfortable summer roost. Anon, the tent-caterpillars came and "jumped their claim." But the sparrows did not resent it, and the two occupants dwelt together in unity. The result is, that the insects have stripped the tree of its leaves, and the poor sparrows are without a shelter, and when it rains they make a pitiful twittering, but they meekly endure their wrongs. O, the love of the sparrow; the base ingratitude of the caterpillar."

The *Prairie Farmer* writes: "This lively little fellow has elicited considerable discussion for two or three years past. His family increases so rapidly that most of our large towns and cities are already quartering his progeny, likewise his "cousins and his uncles and his aunts" and their descendants in large numbers. In regard to whether these birds are a benefit or an injury, the weight of argument thus far has gone to prove that they are not a desirable acquisition.

They are exceedingly pugnacious, driving away almost every other bird that comes within their reach, or attempts to build its nest in their vicinity. But the most serious count in the indictment against them is the injury they do to fruit; not so much to the fruit itself, but to the bushes and trees during the winter. A case in point has recently come under observation. Mr. J. Newhall, of Toronto, Canada, has hitherto been an advocate of the English sparrow, and frequently defended them in the public prints, but he has had an experience with them the past winter which has cooled his admiration. He has a red currant patch to which the sparrows paid great attention. Curiosity led him to investigate the matter, when, to his surprise and consternation, he found every bush entirely denuded of every fruit-bud as clean as if they had been rubbed down with leather-gloved hands—not a bud left. Further investigation showed that his Glass' seedling plums were nearly

stripped of every bud also, and his May Duke cherries were considerably damaged. Mr. Newhall now thinks that if these sparrows increase in the same ratio for the next three years as they have in the past three, it will be useless to attempt to grow small fruits in Toronto."

From the *Gardener's Chronicle*—An Englishman's view of the sparrow ;

"Would that the "hot blasts of indignation" had the power to rid the gardeners of such winged vermin as sparrows and some other birds. I can endorse all that can be said against that worst of all winged vermin, the unspeakable sparrow. The unusual severity of last winter did not diminish the number of sparrows in this district, for there are countless multitudes. Eat caterpillars, indeed! Any one looking at the gooseberry bushes in this district would become an unbeliever in such works of charity by a sparrow.

They are content only with the best of corn and dainties from the kitchen garden, then scent their bills with sweet-scented flowers."

I quote from the proceedings of our State Horticultural Society's report two years since :

"If there is in this State one immitigated nuisance it is the English sparrow. They are becoming so troublesome that we ought to do something to protect ourselves. They are not an insectivorous bird, but destroy an immense quantity of small fruit. Last year my currant bushes had to be covered to prevent their ravages. It is not only this but they will go and pick off every bud from the fruit trees. I think the State Board of Agriculture should take some action towards abolishing this unmitigated nuisance."

The discussion that took place last year at the State Board meeting, upon this subject, was all against the sparrow, and the strongest sentiments expressed that they must have no protection—that they must go. Also a resolution protesting against any repeal of the act passed by our Legislature in 1885, granting the privilege to destroy the sparrow at any time.

The country has up to the present time suffered from loss of grain, the city garden from loss of fruit. Perhaps many have wondered of late why there are so many barren buds upon the

trees and vines, and so many branches with the buds entirely destroyed.

The time has come in which economy must be practiced in all agricultural pursuits, the leaks stopped and the largest results planned for, with the least expense.

The index finger points not to increased acreage, as prices decline, and our grain products are more widely thrown in competition with the Old World, but sound logic seems to point to our National Government, which is a "Government for the people." It has in the past aided very materially the agriculturist, and that justly, for the prosperity of our nation is very closely allied to agriculture.

It has checked the ravages of disease among cattle by National laws, and large sums of money have been paid in diagnosing the various diseases, and in recommending remedies and treatment for disease. It has aided, by scientific investigation, in studying insect life, finding out what is beneficial, neutral and detrimental to plant growth and development, for example, the enemies and diseases of the cotton, orange, grape and other plants and fruits.

It is now looking with favor to the establishing of experimental stations in connection with, or under the direction of, our already established Agricultural Colleges or stations throughout our country.

Our horticultural interests have at last been recognized by the General Government in creating a division of pomology by an act of Congress, passed last year, but though an insufficient provision was made for its support, yet it is a step in advance, and in the right direction. And why should not a government aid any industry whose annual production exceeds a hundred million dollars of value? Are we asking too much for special National laws to be passed to destroy the sparrow?

The State will not remedy the evil, for only where the sparrow has made itself known as a great evil can beneficial laws be passed. Unity of action seems the only effective remedy and that must be by National legislation.

We might create a law which would hold in check the evil, and a premium might be paid (through the Justices of the State or some official) to encourage their destruction by shot or snare, but even then if laws were not enacted in the surrounding States

to destroy the sparrow, we would be obliged to continue our work of destruction indefinitely.

At the last session of the State Horticultural Society, held in this building a few weeks since, the question was again brought up (it has grown to be an annual subject,) "What are the best measures to recommend for the destruction of this pest?" A committee of two was appointed to unite with a like committee from this Board, to formulate plans best adapted for the sparrows' destruction, and to urge the adoption of the same by the proper authorities.

EXPERIMENTS WITH POTATOES.

By NOAH W. PARCELL.

EXPERIMENTS WITH POTATOES.

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TO TEST THE QUALITY, TIME OF RIPENING, PRODUCTIVENESS, AND
ALSO THE BEST VARIETY TO GROW FOR MARKET.

The soil in which the potatoes were grown is heavy with clay subsoil, underlaid with shale, and so situated that the water from heavy rains soon runs off. It had been in corn three years previous to planting it with potatoes. In November, 1885, after the corn had been taken off, ten two-horse loads of barnyard manure were spread broadcast per acre and plowed in. The spring following (1886) the ground was again plowed and the following compost, composed of six hundred pounds of bone dust, three hundred pounds of sulphate of potash, two tons of stable manure and two tons of earth, mixed together under cover and turned until it ceased to heat, was applied broadcast per acre and harrowed in. The rows were marked out with a Darnell marker, three feet apart and five inches in depth. The seed pieces were cut from smooth, medium sized potatoes, one eye on a piece, rolled in plaster and dropped fifteen inches apart in the row, with the exception of the Early Ohio, which were cut two eyes on a piece and dropped twelve inches apart. They were then covered with two inches of earth, and Forrester's Potato Fertilizer spread about one foot in width on the row, at the rate of one thousand two hundreds pounds per acre, and covered with a plow so as to form a ridge over the potatoes. This was done the 29th of April. The 13th of May they were harrowed lengthwise of the row with the Thomas harrow, leaving the rows a little rounding. As soon as the potatoes could be seen in the row they

were plowed with a cabbage plow from the row, as close as possible and deep, then immediately plowed to the row to prevent the roots of the potato from being exposed to the air and sun. The cultivator was then run between the rows once a week until the last of June, when they were hoed by hand and hilled with a moulding plow. The vines were Paris-greened twice. There was one row of each variety four hundred feet in length. In digging, there was one hundred feet in length measured in the middle of the row of each variety. The potatoes were dug and left to dry, so that no dirt would stick to them. They were then weighed and the calculation made what the yield would be per acre in bushels, counting sixty pounds to the bushel, with the following results :

	Time of Ripening.	Yield.
Early Ohio.....	106 days.	282 bus.
Early Vermont.....	115 "	242 "
Beauty of Hebron.....	112 "	256 "
Watson's Seedling.....	116 "	346 "
Lee's Favorite.....	112 "	346 "
Rosy Morn.....	112 "	278 "
Early Rose.....	120 "	346 "
Queen of the Valley.....	125 "	365 "
American Magnum Bonum.....	120 "	176 "
Vermont Champion.....	125 "	263 "
Mammoth Pearl.....	125 "	242 "
Burbank.....	125 "	396 "
White Star.....	125 "	292 "
White Elephant.....	130 "	343 "
St. Patrick.....	125 "	307 "
O. K. Prolific.....	125 "	459 "
Late Rose.....	125 "	336 "
Early Maine.....	120 "	358 "
Pearl of Savoy.....	115 "	346 "
Chicago Market.....	120 "	280 "
Jumbo.....	123 "	399 "
American Giant.....	125 "	346 "
Peerless.....	125 "	368 "
Empire State.....	125 "	350 "
Rural Blush.....	130 "	387 "
Thorborn.....	125 "	363 "

There were fractional parts of a bushel in nearly every case, which I have omitted. I will here state that I think if I had cut the American Magnum Bonum two eyes on a piece, and dropped them twelve instead of fifteen inches apart, the yield would have been much larger.

By referring to the annual report of the New Jersey Board of Agriculture of 1885, page 127, any person can, if they wish, compare the time of ripening and the yields of 1884, and also of 1885, with the last (1886,) except that I have added a few varieties each year for the purpose of testing them. I did not weigh the small potatoes separately, so that I cannot tell accurately, but the proportion was very small. All of the different varieties were smooth and free from scab, except the White Elephant; they were rough and scabby. I think the quality of the Beauty of Hebron is the best of all the varieties. Early Vermont, Watson's Seedling, Lee's Favorite, Rosy Morn, Early Rose, Late Rose, Early Maine, Pearl of Savoy, and Chicago Market are so nearly alike in quality this year that I think it would be difficult for a person to tell one from another after they were cooked. The Early Ohio, as grown in my soil, has never been very good in quality, while in other localities it has been excellent. It is the earliest in ripening of any potato that I grow. Queen of the Valley, Burbank, White Star, St. Patrick and Rural Blush are good late potatoes. The quality of Vermont Champion, Mammoth Pearl, Magnum Bonum, White Elephant, O. K. Prolific, American Giant, Peerless and Empire State do not suit me.

By referring to last year's report, it will be seen that nearly all of the varieties were ripe in a less number of days from the time of planting this year than they were last; also that the yield was less, owing in part to the dry weather in August, which prematurely killed the vines, and the soil having been in corn three years previous was not as light and friable and in as good condition to grow potatoes as it would have been if it had been planted in corn only one year.

POTATO ROT.—Some varieties rotted more than others. As nearly all of it occurred while they were in the ground, I could only form an opinion when we were digging as to its extent. There was no rot to speak of after they were dug. The White Elephant lost by rot twenty-five per cent., Queen of the Valley

twenty, Vermont Champion twenty, Mammoth Pearl twenty, Beauty of Hebron fifteen, Early Ohio ten, Chicago Market five. Of the remaining varieties not more than two percent. O. K. Prolific and Early Rose were more free from rot than any of the others. It will be seen that the large percentage of rot materially diminished the yield in several of the varieties. In the same field, adjoining the first named plot, the land was fertilized, the potatoes cut, dropped and covered, the cultivation done in the same manner, with the exception that instead of twelve hundred pounds of chemical fertilizer applied per acre, there was six hundred pounds. The variety of potato, Early Rose; the yield, two hundred and ninety bushels per acre, so that I think for productiveness, time of ripening and quality, we have no better potato for market than the Early Rose.

REPORT OF EXECUTIVE COMMITTEE.

REPORT OF EXECUTIVE COMMITTEE.

GENTLEMEN :—Another cycle has passed, and again the farmers of our State have assembled to deliberate upon the various matters of importance connected with our trade, to gain wisdom from those who have had experience, to impart knowledge to our fellow farmers, and by our united action advance the interests of all engaged in agricultural pursuits.

With this purpose in view your Committee have endeavored throughout the year to watch over your interests, and at all times to be ready to lend assistance where opportunities offered.

We have held ten meetings during the year, and one or more members attended the various meetings of the county boards, when sufficient notice was given.

We believe these boards are becoming more useful as the farmers are now beginning to appreciate their value, and are aiding in making them, as was originally designed, adjuncts and assistants to this Board. The only drawback we have encountered is that on the question of finance, and we believe that our appropriation should be so increased that we might apportion to each county board a sufficient sum to pay their running expenses. With this object in view, and to correct the conflicting sections of our present law, and also to make more clear the method of obtaining our funds from the State Treasury, your Committee have drafted a law, which, during this session, will be submitted to you for such action as you think best.

The first important business claiming our attention after the last annual meeting was the passage of the Oleomargarine Bill, as offered by Senator McBride, with some amendments. The bill became a law March , 1886, and the Inspector appointed under its provisions will report to you on its value and usefulness. (See page 211, report of 1885).

The resolution on Weights and Measures, referred to this Committee, was forwarded to Senators Sewell and McPherson, with a request that they would give it their careful attention. It was found afterwards that, to accomplish our purpose, a bill would have to be carefully prepared, and all the necessary data and detailed statistics gathered. The matter was referred to Dr. Cook, who has not yet been able to report.

A copy of the resolutions in regard to the improper use of the title "Duroc Jersey Swine" (page 72, report of 1885) was sent to Col. F. D. Curtis, and also the Secretary of the Association, but we have not been informed as to the action taken on them.

The memorial offered at the last session on "Pork," "Contagious Diseases" and "on making the Commissioner of Agriculture a Cabinet Officer" (page 255, report of 1885) were properly prepared and sent to our Senators and Representatives in Washington, from most of whom we received replies. The memorial on "Pork" was printed in the "Congressional Record," a copy of which is engrossed on our minutes.

In order to better preserve our records, and that valuable reports which are received in exchange may be made available to the farmers of our State, and that we may have our collections of grains, grasses, woods, minerals, &c., where the public may be benefitted, your Committee waited upon the Building Commission of our new State Capitol, and obtained from a majority of that Board assurance that they would encourage the setting aside of suitable rooms for this purpose.

Under the provisions of the law governing this Board the following apportionments were made, based on the value of the several reports, viz :

State Horticultural Society.....	\$250
Burlington County Board.....	50
Camden County Board.....	40
Cumberland County Board.....	30
Essex County Board.....	30
Gloucester County Board.....	10
Hunterdon County Board.....	30
Mercer County Board.....	50
Middlesex County Board.....	10

REPORT OF THE EXECUTIVE COMMITTEE. 291

Monmouth County Board.....	40
Union County Board.....	40
Total,	<hr/> \$580

An excellent report received from the Egg Harbor Agricultural Society had to be passed, as they were not the county board; since then we are pleased to report a new board organized, and in good working condition.

Morris County Board has also revived, and is with us this time.

A new board has been organized in Sussex, that will undoubtedly be of great value to the State, and to the farmers of that section.

The Somerset County Agricultural Society has, under the provisions of our laws, become a county board.

Salem County Board was organized soon after our last annual meeting, and is doing good work. This makes two new boards and two boards reorganized, a total of fifteen county boards entitled to receive their proportion of this year's appropriation.

Believing that our State had a larger crop of hay than most other States, our Secretary was directed to correspond with the Secretaries of the various State Boards, and obtain statistics of the condition of the following crops, viz: hay, corn, wheat, oats, potatoes, apples and pears. The replies were tabulated and published in some of our newspapers, but not showing the scarcity in this crop that we had anticipated it was not given wide distribution. We are convinced that this department might be made of much greater value to our farmers and undoubtedly you will, ere long, devise means by which it may supply such information.

Recognizing the value of experiment stations we forwarded to our members in Congress petitions urging the passage of House Bill No. 2933, known as the Hatch Bill. We also forwarded to each county board similar petitions, asking them to take action.

Our annual address will be delivered by the Hon. W. H. Hatch, Chairman of the Committee on Agriculture of the present House of Representatives, and a farmer of large experience.

Burlington County Board having requested an address by the Hon. Frank H. Hurd we have set apart the second evening. Other speakers have also kindly consented to be with us and address you on various topics with which they are familiar, and

we trust all may be able to glean facts that may be of interest and value in future life, but we would again urge every individual to take part in all the discussions and business of the Board.

Respectfully submitted,

EXECUTIVE COMMITTEE, 1886.

REPORTS OF STATE VETERINARY INSPECTORS.

REPORTS OF STATE VETERINARY INSPECTORS.

RECORD OF THE STATE BOARD OF HEALTH AS TO THE CONTAGIOUS DISEASES OF ANIMALS.

Our last report to the State Board of Agriculture contained the records of cases, etc., to February, 1886. During that month no new outbreaks occurred, but some chronic cases were disposed of. We were able to release nearly all herds from quarantine soon after. In March our new cases were entirely confined to Burlington county, with the exception of a single case in an interior town in Monmouth county. In this month there were outbreaks in two herds. In April a serious outbreak occurred in Warren county, near Hackettstown. Several animals were slaughtered but the disease did not spread to other herds. One case also occurred in Salem county. During the summer the State was unusually excepted from the disease.

Notwithstanding the fact that the General Government had ordered special investigations in this State and that parts of the State had been thoroughly visited under its direction, they failed to discover additional cases. In most of the herds above referred to inoculation was practiced and with good success.

At the date of August 2d, 1886, only one herd was held in quarantine (Camden county).

July 29, 1886, D. E. Solmon, Chief of the Bureau of Animal Industry, Washington, called a conference of those in charge of contagious diseases of animals in the chief States in which contagious pleuro-pneumonia had occurred. The occasion of this conference was the fact that an appropriation had been made and authority given by the General Government to confer with the authorities in the respective States, with a view of aiding more directly in the suppression of pleuro-pneumonia. The

conference led to the issuing of a circular by the U. S. Department of Agriculture. After some correspondence and a conference with his Excellency, the Governor, who was especially addressed as in charge of the contagious diseases of animals, in behalf of the Board, and of his Excellency the Governor, we found ourselves unable to accept all the terms suggested by the General Government. The correspondence is on file. It would be a great pleasure to this Board to be able to accept the more active co-operation of the General Government at a time when no acute case of the disease is believed to have recently occurred in the State. It would never have been difficult entirely to eradicate the disease from our midst, if only we could have been protected from incursions from other States. The General Government is now especially active in Delaware, Maryland and Virginia, and we have reason to hope a more complete and permanent riddance than could be secured by the action of any single State.

Reports of hog cholera and Texas cattle fever in Burlington county were investigated in the latter part of August and early in September by Dr. Miller, but proved to be exaggerated. Dr. Hilyard, of Mt. Holly, reported to us an undoubted case of Texas fever, the diagnosis of which was confirmed by a post mortem examination—and the herd quarantined.

Early in September there occurred an alarming importation of contagious pleuro-pneumonia into the townships of Burlington county adjacent to Mt. Holly.

A stock dealer purchased seventy-two bob-veal calves of very inferior grade that were for sale at the Sixtieth Street Stock Yard, New York, for about two cents per pound. It appears that it is common in Burlington county for farmers to purchase young calves thus and fatten them upon their milch cows. Soon after purchase some of these calves were either sick or not thriving.

An examination led Dr. F. R. Hilyard to suspect pleuro-pneumonia. The diagnosis was soon confirmed by the Board. It became necessary to quarantine the herds of some fifteen farmers and to look up all the calves that had been sold, Dr. Hilyard with great activity and promptness succeeding in finding their localities. All sick or ailing ones were immediately destroyed and all that had been fattened were traced, so that in less than ten days after the first knowledge of the exposure nearly all had been dis-

posed of. The others were immediately sought for and found and all that remained destroyed. As the exposure had not in all cases been general, the length of quarantine has varied. Early in October we had outbreaks in three herds near Mt. Holly, from this imported infection.

In the latter part of September a drove of store cattle was brought to Freehold and sold among the farmers of that vicinity.

Sickness and some deaths occurring occasioned much alarm as it was supposed to be pleuro-pneumonia. A post-mortem examination was made of one of the bullocks slaughtered. The enlarged spleen and the disease of the intestinal glands and the ulcers in the intestinal track showed the disease to be Texas fever. A temporary quarantine was instituted until it was believed that any danger of communication was past.

On October 1st we had in all about twenty-four herds in quarantine, more than at any one time for the last five years, yet in no single case had it arisen except from the new and fresh importation of cattle. In no case did any of the old herd become affected, as no doubt would have been the case had the exposure been more constant.

Early in October we found it necessary to quarantine four herds in Gloucester county, and one herd in Salem county, on account of an outbreak of pleuro-pneumonia from some purchases made in the Philadelphia stock yards. It is the old story of farmers who buy unknown stock and choose to put it at once with their herds. So long as this is done, it is doubtful whether the State should pay for such carelessness. An outbreak also occurred in Verona, in Essex county, by which a farmer lost three cows in one night and another had to be killed. The herd was small and the disease did not extend to adjoining farms. The cows were sick several days before any notice was given. The distribution of calves in Burlington county was followed with an outbreak in several herds—so that several cattle had to be killed and the herds inoculated.

During the month, we requested the Hudson County Board of Health to use the funds received by them from cattle permits for skilled veterinary inspection. Feeling the need of such oversight they went beyond this and ordered a general inspection of dairies by a veterinarian. As a result two cases of pleuro-pneumonia

were reported to us and the herds quarantined. One proved to be a different disease.

Some scattered cases of glanders occurred during the month and the animals were destroyed.

Hog cholera was reported this month in a few localities in Bergen, Burlington, Essex and Warren counties.

During November we continued to have much trouble from the introduction of calves into Burlington county. Also two or three herds were affected from another outside purchase. By some accident or securement of imperfect virus, inoculation resulted in the loss of some eight. The particulars will be presented by Dr. Hilyard and Dr. Miller in their part of the report. A careful study of the cases and the collection and consideration of them by our assistants and myself made it clear that it did not discredit genuine inoculation, yet it is to be remembered that inoculation under the best circumstances may entail a loss of about two per cent.

There has been an effort on the part of the General Government to secure the cooperation of the States in a plan by which it should have more decided jurisdiction and then pay for slaughtered animals. The terms presented did not commend themselves to his Excellency, the Governor of the State, or to this Board. They were also declined by the authorities of Pennsylvania, and no arrangement was made in New York State.

Delaware and Maryland having no adequate laws of their own practically yielded entire control to the General Government. There is certainly need of some adjustment of the relations which the General Government is to bear to the States in the management of the contagious diseases of animals. Where it has seen fit to place at our command aid in any emergency, it has been found of service, but the efforts of two authorities moving forward independently of each other do not succeed well.

During December there was no increase of pleuro-pneumonia, save that the herd of Stacy Taylor, in Burlington county, had several cases. He did not seem to have full control of the serious outbreak in Burlington county. Further particulars will be shown by the reports of the various veterinary inspectors.

The revised law as to the contagious diseases of animals enacted by the last Legislature is here appended :

An act concerning contagious and infectious diseases among animals, and to repeal certain acts relating thereto.

1. Be it enacted by the Senate and General Assembly of the State of New Jersey, That in case any contagious or infectious disease shall appear or be suspected to exist in any locality in this State, it shall be the duty of all persons owning or having any interest in animals infected or supposed to be infected, and of any person having knowledge or suspicion thereof, at once to notify the state board of health, or some officer or member of said board, of the facts, and it shall be the duty of the said board, upon receiving such information, or any information in regard thereto, to investigate the same, or cause the same to be investigated, and if any such disease is found to exist, or likely to break out, to quarantine such animal or animals, and to take such precautionary measures with relation to other animals exposed to such disease as shall be deemed necessary, and to enforce such regulations in relation to such diseases as the said board may adopt.

2. And be it enacted, That whenever in the judgment of the said board, its agents or appointees, it shall appear that such disease is not likely to yield to remedial treatment, or that the expense of such treatment will be greater than the value of the animal or animals infected; and when in any case such disease is likely, in the judgment of said board, its agents or appointees, to be communicated to other animals, they shall cause the animals infected to be immediately slaughtered, their remains to be buried at least four feet beneath the surface of the ground, and all places in which the same have been kept to be thoroughly cleansed and disinfected.

3. And be it enacted, That when any animal or animals shall be slaughtered, as directed in the preceding section, the value of the same may, at the request of said board or any person interested, be ascertained and appraised by three disinterested freeholders resident in this state, who shall make and sign a certificate thereof, in the presence of a witness who shall attest the same; such appraisement shall be made on the basis of the market value of the animal or animals slaughtered, just prior to the time when they became so diseased, and shall be limited to the sum of one hundred dollars for registered animals, and to forty dol-

lars for all others ; one-half of the valuation so ascertained shall be paid by the state on the presentation of such certificate, with the approval of the said board indorsed thereon, to the owner or owners.

4. And be it enacted, That when any herd or portion thereof has been or is so exposed to any contagious or infectious disease, and the state board of health deem the disease likely to spread to that portion of the herd still unaffected, although isolated or quarantined, said herd may, with the consent of the owner or owners, and with the restrictions agreed upon between them and the executive officer of the state board of health, cause or allow said herd or herds to be inoculated for the prevention of such diseases as can be thus mitigated ; but any loss resulting from such inoculations shall not constitute any claim against the state, or the board of health ; *provided*, that inoculation for pleuro-pneumonia shall in no case be allowed without the consent and approval of the state board of health, and shall be made under its direction.

5. And be it enacted, That when any city, township or district shall be threatened with any contagious or infectious disease among animals, to such an extent as to seem to require more general precautions, the state board of health shall notify the local board of health, and, with the advice and consent of the local board of health, may for a time prohibit the bringing of any cattle into such city, township or district without inspection and a written permission, and may prohibit the running at large of animals in any township, if not already prohibited by law, for such time as the township board of health shall advise ; and the state board of health may call upon local boards of health to discover and report cases of contagious disease and aid in measures for its abatement and prevention.

6. And be it enacted, That when any animal or herd of animals is held in quarantine under authority given by the laws of this state to the state board of health, it shall not be lawful for the owner or keeper thereof to add any animals to such herd, by purchase or otherwise, without the written consent of said board, under penalty of being adjudged guilty of a misdemeanor and fined therefor to an amount not exceeding one hundred dollars.

7. And be it enacted, That any person or persons refusing or

neglecting to notify said board of health, or any of them, of the existence of pleuro-pneumonia, rinderpest, or any other contagious or infectious disease among animals, shall be deemed and adjudged guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than two hundred dollars, or by imprisonment not exceeding one year, or both, at the discretion of the court; and that if any person or persons shall knowingly buy or sell, or cause to be bought or sold, any animal or animals affected with the pleuro-pneumonia, rinderpest, or any other contagious or infectious diseases, or that has been exposed to a contagious or infectious disease, or is a part of any herd or stock held in quarantine, all such person or persons shall be deemed and adjudged guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding two hundred dollars, or imprisonment not exceeding one year, or both, at the discretion of the court.

8. And be it enacted, That when, by reason of the locality of an infected animal or herd within a city, or by reason of frozen ground or extreme heat, it is, in the judgment of the state board of health, or those acting under its authority, inexpedient or impossible to bury any such dead or slaughtered animals on the premises, the board may authorize any veterinarian acting for said board to slash the skin and cut the flesh of the same, and, either under his direct oversight, or that of a city board of health, or contractor for the disposal of dead carcasses, to give over the same to the use of a bone-boiling or glue or other establishment for the disposal of dead animals, but in no case shall the same, or any part thereof, be disposed of for food, and any such disposal of the same shall make the party or parties concerned guilty of a misdemeanor and punishable by a fine not to exceed one hundred dollars, or imprisonment in the county jail for a period not exceeding six months.

9. And be it enacted, That if, between the first day of October and the first day of May of any year, a veterinarian who has been regularly graduated in veterinary medicine, desires to make a post mortem examination of any animal he has attended, or at the request of the owner of any animal that has died within the city limits, he may do so, if such examination is made within twenty hours of the death or slaughter of said animal; in every

such case he shall notify the city scavenger, or remover of carcasses of animals, of the hour of his examination, and said scavenger shall arrange to remove the carcass in not more than three hours after the beginning of said examination.

10. And be it enacted, That it shall be the duty of the state board of health to keep a full and complete record of all the proceedings under this act, and report the same annually to the state board of agriculture, and such report shall be printed in and form a part of the annual report of said board of agriculture.

11. And be it enacted, That the sum of two thousand dollars is hereby annually appropriated to the state board of health to defray the expenses of the said board in the duties imposed by this act, and that the governor, secretary of state and the comptroller be and they are hereby authorized to determine what sum annually shall be allowed to said board, or any member thereof, for services in the oversight and execution of the duties hereby imposed, but the amount allowed shall not exceed the sum of five hundred dollars in any one year.

12. And be it enacted, That if, on account of the prevalence of any contagious disease of animals, or the necessary guarding against the same, any greater expenditure shall seem to be required, the state board of health shall present the facts to the governor, the secretary of state and the comptroller, who shall authorize such additional amount as they may think necessary, but in no case shall the yearly amount thus authorized to be expended exceed five thousand dollars.

13. And be it enacted, That all bills for money expended under this act shall be audited by the comptroller of this state, and then submitted to the governor for his approval, and after being thus audited and approved by the governor, shall be paid by the state treasurer upon warrant of the comptroller.

14. And be it enacted, That the following acts, to wit: (1) A supplement to an act entitled "An act to establish a state board of health," approved March ninth, one thousand eight hundred and seventy-seven, which act was approved on the twelfth day of March, one thousand eight hundred and eighty; (2) A further supplement to an act entitled "A supplement to an act entitled 'An act to establish a state board of health,'" approved March ninth, one thousand eight hundred and seventy-seven, which sup-

plement was approved March twelfth, one thousand eight hundred and eighty, which further supplement was approved on the twenty-third day of March, one thousand eight hundred and eighty-one; (3) A supplement to an act entitled "An act to establish a state board of health," approved March ninth, one thousand eight hundred and seventy-seven, which supplement was approved March twelfth, one thousand eight hundred and eighty, and also a supplement to the further supplement to said act, approved March twenty-third, one thousand eight hundred and eighty-one, which supplement was approved March seventeenth, one thousand eight hundred and eighty-two; (4) Supplement to an act entitled "An act to establish a board of health," approved March ninth, one thousand eight hundred and seventy-seven, and to supplements thereto relating to the contagious diseases of animals, which supplement was approved on March twenty-second, one thousand eight hundred and eighty-three, and all other acts and parts of acts, inconsistent with the provisions hereof, be and the same are repealed, but any rights acquired under the said acts, or either of them, and any suits pending under the same shall not be affected by the repeal.

15. And be it enacted, That this act shall take effect immediately.

Approved May 4, 1886.

GLANDERS.

During the present year the State has been more exposed to glanders and more isolated or scattered cases have occurred than in any previous year. This we believe to have been mostly caused by the fact that the disease prevailed in the Third avenue car stables of New York and that for a time the policy of concealment or of sale was followed. Horses were brought to this State and sold, as well as some that were brought for slaughter. So soon as this Board became satisfied as to the facts, communication was had with the New York City Board of Health. The matter at once received attention and so far as the law gave power action was had. The effect has been to restrain the disease. Nearly all of our veterinarians have met with cases and have disposed of them as provided by the laws of the State. While some are slow to understand that horses are to be killed as

a nuisance, and without compensation, while cattle affected with pleuro-pneumonia are paid for, yet most see the difference between the one which as a foreign malady the government is endeavoring permanently to eradicate from the country. We believe much service has been done to all owners of horses by limiting this insidious and deadly disease. It still needs to be guarded with accurate care, especially by town committees, city health inspectors and local boards of health. It has not prevailed in any one of the car stables of the State as it did for a time in Newark, but the fact that centres of the infection have been more numerous should put all upon their guard.

Quite a number of horses have been killed in various parts of the State by the advice of veterinarians aiding this Board. Generally the owners, when once the disease is fully certified, are very ready to destroy the animal affected. In nearly every month, our veterinary assistants have found it necessary to condemn horses affected with glanders in various parts of the State.

The present law does not provide as it should for the compensation of veterinarians, and probably further legislation is advisable in the interest of the stock owners of the State.

VETERINARY REPORT OF F. W. HILYARD, V. S.

MT. HOLLY, 1886.

Dr. E. M. Hunt, Secretary :

SIR:—In compliance with your request, I have the honor to report the following :

September 4th. Called to visit a sick steer, the property of Allen Fenimore, who lives in our town, farm about one and one-half miles out. Said steer presented all the symptom of Texan or splenic fever. Administered remedial agents. Saw him again living, on September 5th ; all symptom aggravated, passing almost clear blood with urine. September 6th found steer dead. Examined same and confirmed diagnosis.

September 7th. Quarantined Mr. Fenimore's herd, &c.

September 10th. Called to visit two calves, the property of Leander Clevenger, Tabernacle post-office, Shamong township, Burlington county ; found them suffering from a pulmonary trouble. Temperature, 103 and 104½ respectively. Slaughtered one to confirm diagnosis ; preserved specimen of lung ; sent same to you on September 11th. Said calves had been purchased in lots of three, of J. Abrams & Son, of Red Lion, Southampton township, about July 1st. They purchased them in lot of seventy-six at Union Stock Yards, New York City, the last of June. Mr. Clevenger had lost a calf out of same lot some four weeks before, under similar circumstances. Mr. Clevenger's cows, five in number, had never been in direct contact with calves, he milking the cows and feeding calves from pail.

September 11th. Visited farm of Mrs. Alice Hargrove, Buddtown P. O., Southampton township, who had purchased one calf as above about same time, &c. ; found it suffering from pleuropneumonia ; ordered said calf immediately removed and isolated,

as it was in stall closely adjoining other calves. Cows had been going in to this calf indiscriminately. Number of cows exposed about fifteen.

September 14th. Re-visited, in company with yourself, Mr. Clevenger's herd, and killed the remaining calf. Temperature 104. Post-mortem showed suspicions of pleuro-pneumonia correct. Sent specimen of lung to Dr. Salmon, Washington, D. C. We then called at farm of C. H. Taylor, near above. By inquiry found he had purchased one calf to raise of said infected lot and it had died some three or four weeks since, suffering from similar symptoms.

September 15th. Called upon Messrs. Abrams & Son, and obtained memoranda of sale and disposition of entire lot. Visited farm of Joseph Jones, Indian Mills, Shamong township, and found he had purchased three calves of same, two of which were sick, which I killed. Post-mortem revealed pleuro-pneumonia. The other doing well; ordered to sell at once. Visited Edwin Dudley's farm, near Medford, who had purchased three; one had died, one sick, which I slaughtered, showing pleuro-pneumonia.

September 16th. Visited J. N. Sooy's farm, Buddtown post-office, who had purchased seven calves of same infected lot, four of which died, rest fattened and disposed of. Symptoms same as above. Saw John Early, of Vincentown, who had purchased one calf as above, it dying in a very short time from purchase; he thought it was injured on cars. Saw F. P. Allen, of same place, who had purchased two calves of same, which died as above; supposed to have been injured in like manner. Saw Leslie Peacock, of Medford, who had purchased two, both doing well; will dispose of them at once. Saw E. S. Haines, of Vincentown, who had purchased three calves of same; one had died, the other two were coughing quite a good deal, but thriving. Examined a car load of calves and yearlings, forty-three in number, at Vincentown depot, before they were unloaded; found them all right; gave certificate to that effect. This lot was procured in New York State and were not bought through any stock yards.

September 17th. Visited farm of Mrs. Hargrove and slaughtered her affected calf, post-mortem confirming diagnosis.

September 18th. Visited farm of Biddle Joyce, Red Lion, who

had purchased one calf from same lot. Reports same fattened and sold to butchers. Visited farm of Samuel Peck, Red Lion, who had purchased one calf of same, fattened and sold. Visited farm of B. Deacon Haines, Red Lion, who had purchased one calf of same; found it suffering from pleuro-pneumonia. Post-mortem confirmed diagnosis. Visited farm of Arthur Haines, who had purchased two calves as above; found one affected with pleuro-pneumonia; slaughtered same. Post-mortem revealed lesions. Visited farm of Charles Decou, Tabernacle, Shamong township, who had purchased two calves from same; had fattened one and sold it; the other he was raising; found it suffering from pleuro-pneumonia. Mr. D. being away from home did not slaughter; ordered isolation, &c. Visited farm of Winfield Haines, Tabernacle, who had purchased three calves as above; fattened and sold two; one died in stall where the entire herd was more or less exposed; number of cattle kept, ten.

September 20th. Visited farm of Walter H. Evans & Bro., of Medford, who had purchased eleven calves; reported all fattened and sold. Visited farm of Aaron Harker, Vincentown, who had purchased three calves; reports all fattened and sold. Served quarantine on B. D. Haines, Jos. Jones, Arthur Haines, Winfield Haines. Said Arthur Haines had cow pasturing in same inclosure as bull calf the day I slaughtered him, belonging to some one else. I was not aware of it at that time and since then she has been removed to Benjamin Wisham's farm in same neighborhood. Revisited C. Decou's farm; slaughtered his calf; post-mortem confirmed diagnosis. Quarantined his herd, as also Mr. Clevenger's.

September 21st. Released by your order quarantine of Mr. Fenimore's herd, where the case of Texas fever was. Visited Mr. Fenton Gaunt's farm, near Mt. Holly, who had been losing his pigs for some time. I found his trouble to be pneumo-enteritis (hog cholera). Met Mr. C. Stackhouse, of Medford, who had bought two calves of infected lot; reports same doing well; will market at once. Called at George W. Haines', Medford, on whose farm this entire lot spent one or two days and nights immediately upon being unloaded from cars in Medford. He retained two; one died; the other fattened and sold.

September 22d. Visited E. S. Haines' farm, near Vincentown, his remaining two calves showing decided symptoms of pleuro-

pneumonia. Did not slaughter that day but promised to call soon. Visited George Frampus' farm, who had bought eight calves of said lot. Reports all fattened and sold, having lost one of pulmonary trouble. Visited farm of William Joyce, of Red Lion, who bought four of the same. Reports all fatted and sold. Visited E. F. Joyce's farm, who reports having purchased two; one died; other fatted and sold.

September 24th. Revisited E. S. Haines' farm, of Vincentown, with express purpose to kill his two calves, but found he had disposed of same at depot and were shipped to New York butchers, being able to report this day all calves disposed of.

October 2d. Called to revisit Mr. C. H. Taylor's farm, where I found an outbreak of pleuro-pneumonia in two cows; temperature 106 and 105½. These cows showed symptoms of disease just ninety days after said calf sickened; both very acute; cannot live long.

October 4th. Visited farms of J. N. Sooy and Edwin Dudley, where I found each had an outbreak in one cow, 104 and 106½. Ordered isolation, etc. Revisited C. Taylor's herd; killed one cow; post-mortem confirmed diagnosis. Had cow appraised; the temperature of this cow had fallen two and one-half degrees since first examination. In looking over the herd I found another case; temperature 106½.

October 6th. Killed another cow for C. H. Taylor. Obtained virus and inoculated balance of his herd, comprising five head—four cows and one bull.

October 7th. Inspected and inoculated herd of Edwin Dudley—thirteen cows and calves; sick cow failing rapidly.

Revisited Arthur Haines' herd; found them to be all right.

Revisited Leander Clevenger's herd; found it all right.

October 11th. Slaughtered E. Dudley's sick cow; obtained urine and sent some to Dr. Miller; examined cows' tails; all appeared to be sore.

October 12th. Revisited farm of Mr. Sooy, killing his cow; obtained virus and inoculated his herd.

October 15th. Visited E. F. Joyce's herd; found one sick cow suffering from pleuro-pneumonia; ordered isolation; a very acute case.

October 16th. Revisited both Mr. Taylor's herd and Mr. Joyce, killing for each a cow, after having them appraised, &c.

October 17th. Called to visit W. H. Evans' farm ; found one case of pleuro-pneumonia.

October 18th. Revisited Mr. Evans' farm ; inoculated his herd and found three more cases of pleuro-pneumonia. Also revisited Mr. Joyce's farm and inoculated his herd.

October 18th. Called to visit farm of James S. Hartshorn, Southampton township ; found steer suffering from pulmonary trouble, temperature $105\frac{1}{4}$; case somewhat complicated, with a catarrhal affection. Examined his herd of cattle, thirty in number. Found he had bought five cows about middle of September, of James Stiles, a dealer of Vincentown, who had purchased them in with a lot of seventy-five which he had sold in some five or six townships ; found one of the five to have been in the habit, ever since purchase, of isolating herself from the rest of herd ; found on examination that her lungs were diseased, breathing labored, temperature 102, head carried low, nose elevated, coat rough and staring.

October 20th. Revisited above, in company with Dr. W. B. E. Miller, who, upon examining steer and cow, decided the trouble to be pleuro-pneumonia. Killed steer, with consent of owner ; post-mortem confirmed diagnosis.

We then visited Mr. Edward Bozarth's farm, near Buddtown, who had lost one cow a few weeks since and had one sick. We found the trouble to be tuberculosis and ordered immediate slaughter. Then visited stable of Mr. Samuel Sleeper, of Vincentown ; found a mule suffering from acute glanders, which we immediately killed. Mr. Sleeper purchased a pair of black horses of J. O'Brien & Bro., hotel keepers of Lumberton, some months since. One of said horses was discharging at nostril at the time of purchase and had had hemorrhages before sale. Said animal was not in stable at this time.

October 21st. Called to visit farm of Mr. Clayton Stackhouse, near Medford. Found one case of pleuro-pneumonia, cow ; ordered isolation, &c.

October 23d. Re-visited Mr. Evans' farm, in company with yourself, found the four cows failing rapidly ; also visited Mr. Stackhouse's farm ; found three cases of pleuro-pneumonia. Killed one, confirming our diagnosis. Upon looking through his herd found one more case ; had her included in the appraisal, making four.

October 24th. Revisited again Mr. Stackhouse's herd and inoculated the balance of his herd, viz: Twenty mature animals and some calves. Killed the three remaining sick cows, when post-mortem confirmed diagnosis.

October 25th. Revisited Mr. Hartshorn's herd, killing his affected cow, inoculating balance; post-mortem of said cow confirmed diagnosis. Assisted by Dr. Smith, I then visited stable of Samuel Sleeper. Found black horse and upon examination declared him to be afflicted with chronic glanders in such a condition that he would in all probability work and perform his duty faithfully for an indefinite period, but was a risk to almost every horse or mule he came in contact with. So with owner's consent we slaughtered him at once and examined his nasal organ, finding decided ulceration of same. We then visited Mr. Evans' farm and killed his four sick cows, which were running down rapidly. Post-mortem confirmed diagnosis.

Final summary of calves, &c., to date :

	Calves bought.	Calves died.	Calves killed.	Calves fattened & sold.	Cows exposed.	Cows killed.
Ely F. Joyce, Red Lion	2	1		1	9	1
Jos. Jones, Indian Mills.....	3		2	1	5	
William Joyce, Red Lion.....	4			4	13	
Leander Clevenger, Tabernacle.....	3	1	2		5	
C. H. Taylor, Tabernacle.....	1	1			8	3
Clayton Stackhouse, Medford.....	2			2	24	4
Leslie Peacock, Medford.....	2			2	8	
George W. Haines, Medford.....	2	1		1	16	
Aaron Harker, Vincentown.....	3			3	28	
F. P. Allen, Red Lion.....	2	2			14	
Biddle Joyce, Red Lion.....	1			1	10	
John Early Vincentown.....	1	1			12	
Edwin Dudley, Medford.....	3	1	1	1	9	1
George Frampus, Red Lion.....	8			8	22	
J. N. Sooy, Buddtown.....	7	4		3	9	1
Mrs. Alice Hargrove, Buddtown.....	1		1		14	
Winfield Haines, Tabernacle.....	3	1		2	10	
Arthur Haines, Tabernacle.....	2		1	1	12	
Walter H. Evans & Bro., Medford.....	11			11	29	4
Charles Decou, Tabernacle.....	2		1	1	6	
Samuel Peck, Red Lion.....	1			1	6	
B. Deacon Haines, Red Lion.....	1		1		7	
E. S. Haines, Vincentown.....	3	1		2	18	
J. Abrams & Son, lost on cars.....	6	6				
Died before sale.....	2	2				
Total.....	76	22	9	45	274	14

Thus will be seen by above, that seventy-six calves were purchased and brought to Medford about July 1, 1886, six of which died on cars during transportation. Two others died before they were sold, twenty-two died in hands of purchasers, nine I killed, forty-five were fattened and sold to buyers, who sent same to New York butchers. It will be further seen that two hundred and ninety-four mature animals were exposed, of which fourteen have been slaughtered. Inoculation has been performed in every instance where there has been an outbreak. The infected cattle have been confined to four townships, namely, Shamong, Southampton, Medford and Lumberton.

The killing of Mr. James S. Hartshorn's steer and cow are not included in above summary. I was called this P. M. to visit farm of John Hozier, Birmingham post-office, Ewanville station, on Pennsylvania Railroad, who had bought two calves of Messrs King and Lippincott, of Pemberton, August 10th. Said calves came from New York. Found both affected with contagious pleuro-pneumonia, five cows being in direct contact ever since purchase. Cows now coughing badly. Killed one calf, with owner's consent. Post-mortem confirmed diagnosis.

November 6th. Wm. Sooy called at my place to-day for first time, saying his cows were not doing well.

November 10th. Called to see Mr. Sooy's cows; he was not home.

November 11th. Called by Dr. Hunt to meet him (Dr. Hunt) at Sooy's place. We killed one cow, which was suffering from pleuro-pneumonia.

November 7th. Called to see cow of Mr. Job Garwood, which had been exposed to Evans Bros' bull right fresh from their pleuro-pneumonia herd. We kept cow in close isolation and treated her and now hope her troubles are over and has not had pleuro-pneumonia at all.

November 12th. Amputated the parts of three tails from cattle in herd of Mr. Sooy. One of this herd Mr. Sooy afterwards slaughtered.

November 29th. Dr. Miller, in Dr. Hunt's preserve, and myself, killed cow belonging to C. Stackhouse, pleuro-pneumonia. Mr. Taylor, of Shamong, did not lose any from inoculation.

December 13th. Slaughtered horse with glanders, the property of P. B. Lippincott.

Mr. Sleeper to date has lost two mules and one horse since October 1st, 1886.

Hog cholera or pneumo-enteritis prevails in sections of our county but very much modified in comparison with other years. I hear quite a good deal of complaint from chicken cholera.

Paralysis in its many forms is becoming very common—parturient apoplexy (milk fever) carries off a large number of our best cows every year; very much worse this year than formerly. Quite a number of horses are affected with chronic discharge from nostril—nasal catarrh. Along Rancocas creek indigestion has killed several valuable cows for which we can find no cause.

VETERINARY REPORT OF WM. B. E. MILLER, D.V.S.

To Dr. E. M. Hunt, Secretary State Board of Health of New Jersey :

In compliance with your request for a report of such diseases of animals as may have come under my observation and inspection during the past year, I respectfully submit the following :

"CONTAGIOUS PLEURO-PNEUMONIA."

On January 26th, 1886, I reported to you that contagious pleuro-pneumonia had broken out on the farm of John Dawson, near Salem, Salem county, and on the 27th of that month I revisited his farm and slaughtered three cows, all of which were seriously affected with that disease, as fully demonstrated by post-mortem examinations made on each. The other animals in the herd were inoculated and quarantined, and regular visitations were kept up until the herd was subsequently released from quarantine.

On January 30th, in response to a request from Dr. T. B. Rogers, of Woodbury, I visited the premises of Martin Cloran, a milkman of Gloucester City, Camden county, and found three cows suffering from pleuro-pneumonia—one an acute and the other two chronic cases. The acute case was slaughtered by Dr. Rogers and myself on February 5th, and the post-mortem examination fully confirmed the diagnosis. The herd was quarantined and carefully watched for some time afterwards. One of the chronic cases died and the other was slaughtered.

On February 9th, I visited the farm of Shreve Robbins, near Vincentown, and assisted in the slaughter and post-mortem examination of the chronic case of pleuro-pneumonia still remaining in that herd, as reported to your Board by Dr. Dyer and myself, in our last reports. The post-mortem examination revealed a

large abscess in the central portion of one lung, completely encysted and containing a large quantity of pus and broken down and necrosed lung tissue. On February 13th two chronic and one acute case of pleuro-pneumonia were found in the herd of Robert Smith, of Wrightsville, Camden county. The acute case died in a very few days. Of the others, one was slaughtered after having been fattened and the other died. The herd was subsequently released from quarantine, no further outbreak of the disease having appeared. On February 15th, an outbreak of pleuro-pneumonia occurred on the farm of Joseph Mayhew near Elmer, Salem county. One cow had died and there were others sick, all of which, except one chronic case, were slaughtered in your presence a few days later. The other animals in the herd were then inoculated, quarantined and closely watched until such time as they could be released. The chronic case was subsequently killed by a butcher. There was also a slight outbreak in the herd of Newkirk Van Meter, a near neighbor of Mr. Mayhew. The infection was undoubtedly carried from the latter herd to that of Mr. Van Meter. The affected cow was slaughtered May 3d, and the herd inoculated and quarantined. Mr. Van Meter subsequently lost one or two animals, but as I did not see them, I could not state whether their death was due to this disease or not. On February 20th, I visited the farm of George A. Bowne, of Middletown, Monmouth county, and examined his herd of cattle. I found two animals suffering from lung trouble, one of which I appraised and slaughtered, when the post-mortem disclosed all the characteristic lesions of contagious pleuro-pneumonia. Mr. Bowne had already lost, previous to my visitation, one or two animals, the symptoms of their disease being, as he stated, just the same as the one I slaughtered. This herd was subsequently inoculated and revisited by Dr. Dyer and yourself and the other cow was slaughtered by you or in your presence some time afterward. I made several other visitations at a later period.

On April 12th I discovered an outbreak on the farm of Charles Hewitt, near Woodstown, Salem county. There were two cases in a herd of thirteen cattle, one of which, a bull, had been purchased in or came from Philadelphia a few months before, and was a chronic case and was the source of infection. He was

rapidly gaining flesh, and was afterward slaughtered by a butcher for food. The other, a cow, was an acute case of very recent infection, which I appraised and slaughtered and made a satisfactory post-mortem, fully confirming my diagnosis. The balance of the herd was at once inoculated and quarantined and carefully watched until released. There was a subsequent death of one animal, which I did not see, however, but which I was informed was the result of an accident.

On May 10th, I visited the herd of Bernard Farmer, near Bound Brook, Somerset county. I found three animals with chronic lung lesions, all of which I believed to have been previously affected with pleuro-pneumonia. They were still coughing occasionally.

On May 31st, in company with Dr. I. W. Hawk, of Newark, we visited the farm of B. O. Brown, near Raritan, Somerset county, and found one animal out of a herd of twenty-four that had previously been provisionally quarantined by Dr. Hawk, suffering with prominent symptoms of acute pleuro-pneumonia. The owner of the animal was not at home, and no one appearing around the place who had any authority except a German assistant, who could not speak English, we were obliged to defer any further proceedings at that time. Dr. Hawk revisited the farm again and no doubt made a full report of the same afterward.

On June 29th, I was called to see a sick cow at the stable of Mrs. Gallagher, in Camden city. I found her suffering from lung trouble, the symptoms being those of pleuro-pneumonia. The disease had been found in the stable about two years ago, and some were inoculated. I decided to revisit and not slaughter as no immediate danger would result from the infected stable. I made another visitation on the 9th of July and found that the cow was dead, and had been taken to the bone boiling establishment without my knowledge of the facts concerning her death.

On July 9th, I was called to see a cow owned by Mr. Hugh Hatch, of Fish House, Camden county. I found the animal suffering severely, her symptoms resembling those of contagious pleuro-pneumonia. The history given by Mr. Hatch was that he had bought no cattle for over a year, and had not, so far as he knew, been exposed to the disease.

Subsequent visitations were made to this farm but no further

appearance occurred for some time. On August 19th I revisited Salem county and by the authority of the late Board released from quarantine the herds of Joseph Mayhew, Newkirk Van Meter, and Charles Hewett, their herds at that time all being in good health and the chronic cases having been properly disposed of.

On September 20th, I visited Mount Holly, in response to a telegram to meet you there to take measures to prevent the spread of pleuro-pneumonia from several farms in Burlington county, upon which there had been an outbreak of the disease, from the purchase and sale of a drove of grass calves in that vicinity, brought from New York City by Messrs. Abrams & Sons, of Vincentown, and disposed of as soon as practicable after their arrival at their destination. Dr. Hilyard, of Mount Holly, who was present, reported the number of herds infected, and he was instructed by you to revisit at once the several farms and slaughter the infected animals and inoculate the healthy, which he did as reported to you by himself from time to time. I made several visitations to the infected localities and re-examined the inoculated herds. In many instances I found it necessary to remove the tails in order to prevent death from blood poisoning.

On September the 28th, I visited the farm of George W. Kirby, near Avis' Mills, Salem county, and found two cases of pleuro-pneumonia, one of which was in a chronic condition. This cow had been purchased from a drove that came from Philadelphia some time in the month of July, and was the source from which the other, the acute case, obtained infection. I at once slaughtered the acute case, from which I obtained sufficient virus to inoculate the others in the herd.

On October 4th, I visited the farm of Jacob Kirby, near Harrisonville, Gloucester county, and examined his herd of twenty-three animals, all of which had been exposed to infection through the medium of the cow owned by George H. Kirby, she having been first purchased from the drove by Mr. Jacob Kirby, the father of George H. Kirby. Found one or two animals coughing occasionally, one of which showed some lung trouble. I quarantined the herd and inoculated the entire lot. There were also several other herds that had been exposed through the sale of animals that were in the same drove, all of which were visited

subsequently and examined. But no affected animals were found, and no further outbreak has thus far taken place, in either the quarantined herds, or those that were exposed only.

On October 11th, I visited Verona, Essex county, and examined four animals found at the stable of George B. Pease, of that town. One of the cows was convalescing from an attack of pleuro-pneumonia and was evidently passing from an acute to a chronic stage of the disease. I was informed by the father of Mr. Pease that they had already lost three cows by the same disease, and that one had been slaughtered by Dr. Lowe a few days before, upon which post-mortem examination was made, the result of which and the conclusion arrived at by them I presume have been made known to you.

Dr. Hawk afterward visited this herd and has no doubt informed you if any further affections occurred.

On October 20th, in company with Dr. F. W. Hilyard, of Mount Holly, I visited the farm of James S. Hartshorne, near Vincentown, Burlington county. Two animals out of a herd of forty were suffering from lung trouble. One of them, a steer, was very sick and rapidly approaching a fatal termination of his disease. With Mr. Hartshorne's permission, we at once killed him and made a post-mortem examination, which confirmed beyond a doubt a diagnosis of contagious pleuro-pneumonia. The other animal was subsequently slaughtered by Doctors Hilyard and Smith, and the herd inoculated. This and other herds were visited from time to time since, and watchful care taken to prevent any further outbreak or spread of the disease.

On November 11th I visited the farm of Elmer Duell, near Woodstown, Salem county, and examined his herd of twenty-six animals. Found four of them quite sick with lung trouble, one of which I slaughtered. The post-mortem did not reveal the true characteristic lesions of contagious pleuro-pneumonia and was not as satisfactory as might have been desired, but for safety I quarantined the herd and awaited further developments. At a subsequent visitation, made a few days later, I failed to find any change in the condition of the animals. They were afterward seen by both Dr. Hawk and yourself, and one animal slaughtered in your presence, and the conclusion arrived at was, that the disease was bronchial inflammation of the lungs.

On November 25th, I discovered a new case in the inoculated herd of Clayton Stackhouse, of Medford, Burlington county. The cow was one that had been inoculated by Doctors Hilyard and Smith, about a month or so prior to the time of discovery. The inoculation not taking effect, I slaughtered her in your presence, on November 29th, and the post-mortem proved the diagnosis beyond a doubt, the left lung being nearly solid in all its parts. On December 7th, I was called to an outbreak in the herd of Stacy B. Taylor, of Wrightstown, Burlington county, caused by the purchase of three grass calves a short time before. The calves did not come from the same drove that infected so many herds in the vicinity of Vincentown, Medford and Mount Holly, but were brought direct from New York City to Wrightstown by a stock dealer of that place, and by him sold to Mr. Taylor immediately upon their arrival.

Mr. Taylor informed me that he had lost one cow a short time before with the same disease, so far as he was able to judge. There were in the herd at this time twenty-eight animals, two of which were owned by other parties. Owing to the want of time I was unable to examine all the animals, but of ten examined *four* were found diseased, one of which I at once killed to prove my diagnosis. The animal, a yearling, was infected in one lung which when removed weighed ten and one-half pounds, the other, the normal lung, weighing only one and one-quarter. I sent a portion of the diseased lung to you as a specimen. On the following day I again visited the place and met you there by appointment (per telegram). A thorough examination of the entire herd disclosed the fact that at least eight of the animals were already infected, six of them badly. On that occasion we slaughtered seven, six cows and a calf, all of which were diseased. Another, a bull that was fat and fine, was ordered killed for beef to prevent him from developing the disease. Of the remaining animals nine were inoculated, the others being in my opinion already infected, rendering the operation useless. Subsequent visits made weekly proved the diagnosis to have been correct, as on the 28th of December I slaughtered another cow, and re-examinations demonstrated the fact that the disease was rapidly advancing in the others. At a visit made January 8th, 1887, the date of this writing, I was compelled to

slaughter five others—two cows and two calves that were born to them since the first visitation of December 7th, together with heifer that was among the nine that were inoculated on the 8th of December. All of these were badly infected, one of the cows having in her the finest specimen of thickened pleura that I have ever seen in all my experience. Her calf, less than a month old, had the lesions well marked in both lungs, while the calf from the other cow a few days younger was affected in one lung only.

In addition to the visitations enumerated above, I have also visited a great many places and examined herds that were reported as being infected with "contagious pleuro-pneumonia," but which when examined were found to be suffering from various other diseases. Very many cases were however affected with lung trouble non-contagious in character.

In all the herds found infected with contagious pleuro-pneumonia, the healthy animals were, in accordance with your instructions, after the expressed desire or consent of the owners, at once inoculated and the herds strictly quarantined, watched and re-examined for three or four months afterward. The infected animals were slaughtered as rapidly as they successively developed the disease, until there were no longer any cases existing in the several herds and they were released from quarantine. At the present time there are two herds in quarantine in Salem, one in Gloucester and about a dozen in Burlington county, and all of these, together with those that have been released during the year, have with but one single exception been infected by the purchase of cattle from adjoining States, which were infected when purchased and carried the disease with them to the herds to which they were attached. Even the exception referred to might truthfully be said to have been received in the same manner as it was carried to an adjoining farm from one which received its infection in the manner above stated. In many cases the disease came through the purchase of that class of animals known as grass calves that were of an inferior quality and were bought because they were cheap. This state of affairs calls for more care on the part of dealers and purchasers in the selection of stock in the markets or from the section of country whence they are selected. It also calls for more

stringent measures against the shipment of cattle from adjoining States, unless said cattle are known to have been brought from sections of the country wherein no disease exists, and to be in a perfect state of health at the time of shipment.

TUBERCULOSIS.

Tuberculosis has been found to exist to an alarming extent throughout this entire section of the State. I very much doubt if there is any part that is entirely free from it. During my inspections for the Department of Agriculture and for your board this year, I have found seventy-six well marked cases and more than double that number that I am sure are slowly developing this disease in the counties of Burlington, Camden, Cape May, Gloucester, Mercer, Middlesex, Monmouth, Ocean and Salem alone. And I well know that other counties have an equal percentage of cases. Considering the fact that this disease affects both the milk and the flesh of the animals that have it, is it not time that something was done towards its eradication, or at least to prevent the sale of milk from tuberculous cows, or the disposal of their carcasses for food? To my personal knowledge, scarcely a week passes that cases are not sold for slaughter for food—mostly for bologna beef, and as a tuberculous cow will continue to give milk almost to her hour of dissolution is it not natural to suppose her supply finds its way into the market to be retailed out to customers in connection with other milk? Our State has passed a law authorizing an inspector of milk, who is paid to examine and condemn the article whenever he finds it below a certain standard, or contains a certain amount of water. This is all very well and I believe it proper and right to do so. I do not think, however, there is any great danger to human health from drinking watered milk, so long as the water used is not impure in quality, even if the milk was two-thirds water. Yet the law has provided against this great evil, but has failed to provide for the inspection of milk or the flesh from cows that are diseased with a disease that most surely jeopardizes the health of every consumer. In my opinion this disease should be included in the list of those that should be eradicated by slaughter and burial of the carcasses, and every herd in which a suspicious animal exists should be examined and all subjects, if

found therein, killed at once. I think it of more importance even than contagious pleuro-pneumonia, as that disease involves a question of money value only, while tuberculosis includes both pecuniary loss and the public health.

PHTHISIS PULMONALIS VERMINALIS, OR LUNG WORMS.

This disease has been quite prevalent in some sections of the State, although not as much so as in some former years.

SPLENIC FEVER.

This disease was the cause of the death of a number of animals during the latter part of the summer and the early autumn months. In the vicinity of Marlton and Moorestown, in Burlington county, and near Freehold, in Monmouth county, it raged quite extensively for a time, and the losses resulting from it were quite serious.

SWINE PLAGUE,

Commonly known as hog cholera, has extended over a larger area of our State during the last year than ever before in my experience, and in some sections it has swept away nearly every herd in the township. In others where it has before existed and was better known, the losses have not been so great, due perhaps to the establishment of better sanitary measures, and a previous knowledge of the peculiarities of the disease. At best the fatality attending it is very serious and swine breeders will have to turn their attention to some other source of revenue unless something is done to check the ravages of this evil.

GLANDERS.

During the year I have examined twenty-six horses and mules reported as having glanders. I condemned and ordered destroyed twenty-one, most of which I slaughtered at once, or caused it to be done under my supervision. They were located as follows: (One) in Atlantic, (two) in Burlington, (one) in Cape May, (twelve) in Camden city, (one) in Gloucester, (two) in Monmouth, (one) in Mercer and (one) in Middlesex counties. I also held two consultations with Dr. Hawk on five cases near Millstone, Somerset

county, all of which were condemned and slaughtered. I also visited another case near Mt. Holly, at the request of Dr. Hilyard, of that place, which we also condemned and which was afterwards slaughtered. All of these were well marked cases and nearly all had been purchased or traded for in Philadelphia or New York Cities and brought into New Jersey. Thus you see that not only "contagious pleuro-pneumonia" but "equine glanders" as well is sent us by our neighboring States.

"Azoturia," "spinal meningitis" and "epizootic influenza" (pink eye) have each been quite prevalent among horses during the last two months in this locality and as these diseases are as a rule more prevalent during the early spring months, horse owners should exercise care in the treatment of their animals during that season of the year particularly.

VETERINARY REPORT OF I. W. HAWK, D. V. S.

NEWARK, N. J.

To the State Board of Health :

I submit the following report for 1886.

March 27th. I visited Mr. B. Harkey's farm, at Centerville, Essex county, and examined his herd of cows ; had one killed ; found the trouble to be tuberculosis. He had lost four (4) cows, and has six (6) others diseased.

April 1st. Visited a herd of cows belonging to Mr. J. H. Cook, of Centerville, Essex county ; found six (6) cows diseased with tuberculosis.

April 30th. I examined a herd of cattle belonging to Mr. J. B. Barcalow, at Imlaystown, N. J., and found one (1) chronic case of pleuro-pneumonia.

June 3d. I examined a herd of twenty-five head belonging to Mr. E. G. Brown, at Somerville, N. J., and found one (1) cow suffering from acute pleuro-pneumonia.

October 25th. Visited a herd of cattle belonging to Mr. G. B. Pease, at Verona, N. J., and found that he had lost four (4) cows with contagious pleuro-pneumonia. He has eight (8) cows remaining.

October 28th. I examined Mr. B——'s cows, at Marion, N. J., Hudson county, but did not find any affected with contagious pleuro-pneumonia.

October 30th. Revisited Mr. G. B. Pease's, Verona, Essex county, as to pleuro-pneumonia.

November 8th. Visited G. B. Pease's place, but found no more cattle affected with pleuro-pneumonia. I also revisited the above place on November 26th and 30th.

December 1st. I examined a herd of cattle belonging to Mr. Elmer Duehl, at Woodstown, N. J., Salem county, as to conta-

gious pleuro-pneumonia, but upon inspection found some of them suffering from bronchial trouble, due to low marshy land.

GLANDERS.

January. Visited Mr. Alexander Cooper's, at Millington, Morris county, and examined one horse; found him to be suffering with catarrh.

March 14th. Visited Mr. B. W. Hopper's stable, at Newark, New Jersey, and found a horse affected with glanders. I had the stalls torn out and the stable thoroughly disinfected.

March 15th. Revisited Mr. B. W. Hopper's and had the affected horse killed. I also visited the above place on March 28th and April 4th, but found no other case of glanders in his stable.

May 22nd. I visited Mr. Van Cleef's at Millstown, N. J., and had four (4) horses killed that were affected with glanders. He had another horse, but it shows no signs of the disease.

May 31st. I visited a horse belonging to Mr. Fred Voorhees, supposed to have glanders, but upon examination found it not to be that disease. This place was at Blackwell's Mills, Somerset county.

VETERINARY REPORT OF WM. P. SMITH, D. V. S.

TRENTON, N. J., December 31st, 1886.

To the State Board of Health :

GENTLEMEN :—I submit the following report of work done for the State Board for the past year :

March 3d. Visited farm of Asher Higgins, Hopewell, in company with Dr. Hurley and found glanders to exist. We destroyed one horse and isolated one more which looked suspicious, but have heard nothing further from it as yet. The stables were thoroughly cleansed and renovated.

March 25th. By order of Dr. E. M. Hunt, visited farm of Judge Brown, Old Bridge; examined cattle said to be infected with pleuro-pneumonia. He had lost two and had one more sick; failed to find any traces of the disease, they having died from other causes, the rest of the herd being perfectly healthy.

June 2d. Visited farm of John C. Robbins, Hamilton Square. He had lost three cows. Held post-mortem and found them to have died from anthrax or splenic fever.

June 10th. Visited in stables of the Delaware Ice Company a supposed case of glanders, it having existed in this stable last year. I failed to find this to be a case which was very formidable. This disease is becoming very troublesome in a great many localities and should be dealt with very promptly.

June 14th. Visited the farm of John S. Yard, Clarksville; he had lost three cows and had two more sick; examination revealed anthrax or splenic fever.

June 15th. Was called to see horse belonging to G. D. Hough, Chambersburg. Found him to be affected with glanders. I killed him immediately. He was purchased from O'Brien's circus by Thos. Crawford, who in turn sold him to Hough.

June 24th. I visited farm of Wm. P. Walton. Found cow suffering to such extent that it was impossible for her to live only

a few hours. I killed her. Post-mortem failed to reveal pleuro-pneumonia. This farm was infected some years ago.

July 3d. Visited Asbury Park and destroyed a horse having glanders belonging to Mr. Bennett. This horse had been traded quite considerably and it is a wonder that the disease had not spread, but I have not heard of any cases as yet.

July 4th. Was informed that glanders existed at Manasquan. I visited that place and found nothing but ordinary colt distemper.

September 27th, 28th and 29th. Visited Freehold to investigate a herd of cattle bought by Forman and Vanderveer, who purchased seventy-eight head at Buffalo. He had lost eight. Held post-mortem on one we killed in presence of Dr. Hunt and others, which resulted in finding Texas fever. There were several others sick, which were isolated, and we quarantined the several herds where it existed. He having sold most of them before the disease showed itself, there have been no more outbreaks and the herds have been released from quarantine.

October 20th. Found horse suffering from glanders, belonging to James M. Schenck, Pennington ave., which I destroyed.

October 25th. Visited Mount Holly, in company with Dr. Hilyard; destroyed six cows infected with pleuro-pneumonia. We also inoculated forty head. We also killed a horse at Vincentown affected with glanders. The disease existed in the stable a short time before.

November 13th. I destroyed a horse in Chambersburg affected with glanders, belonging to a Mr. Wharton.

November 29th. Examined a horse in possession of John Seeds, which looked suspicious as to glanders.

December 1st. Visited farm at Trenton Junction to examine a cow that the owner thought had pleuro-pneumonia. I found her suffering from dropsy of the chest.

VETERINARY REPORT OF WM. HERBERT LOWE, D. V. S.

PATERSON, New Jersey.

In accordance with my duty as one of the State Veterinary Inspectors of New Jersey, I herewith respectfully submit a report of such services as I have rendered, under direction of the State Board of Health, for the year ending December 31st, 1886.

Many cases of glanders have come under my observation during the past year. But not unfrequently have I been called to see alleged cases and upon examination found the animals to be suffering from chronic nasal gleet, *febra pyrogenica* in a severe form, distemper, or some other disease other than glanders. On the other hand I have condemned horses as glandered and yet the owners would not have them destroyed until obliged to do so. I have examined a large number of suspicious cases, but will only allude to the ones I have been called upon to visit in the interest of the State.

I visited Ridgewood, Bergen county, February 8th, and examined horses of Isaac E. Hutton, a lumber dealer of that place. Found one horse with glanders in an aggravated form, which I had destroyed at once. There were two other horses in the stable which, although the disease was not developed, yet I regarded as suspicious. They were isolated and put under a prophylectis line of treatment. Upon a subsequent visit there was no further development of the disease.

February 19th. I ordered a glandered horse destroyed owned by John Sutcliff, 38 Bridge street, Paterson.

March 6th. I visited Totowa and had a glandered horse destroyed belonging to William Farren.

April 29th. I was called to Elm street, Paterson, in consultation with M. A. Pierce, D. V. S., to examine a case which Dr.

Pierce had under his charge. Although the case might be regarded as suspicious, yet upon examination we failed to find symptoms to justify action on my part. The horse had little value and the owner was advised to have him destroyed.

May 26th. I was notified of a case of glanders at the place of Isaac N. Kent, Fairfield, Essex county. I visited Fairfield at once, but found the horse to be suffering from a very different ailment.

June 10th. Case reported belonging to Charles Schneider, Weiss street, Paterson. Upon examination I found that the horse was *not* glandered.

July 2nd. Visited West Paterson and found a glandered mustang at the stable of Albert Glover; owner was not satisfied as regards the diagnosis. Another practitioner was called in consultation who condemned the animal at once. We made a post-mortem examination which verified the diagnosis.

July 4th. Destroyed glandered horse owned by James Pearson, West Paterson. Made autopsy.

July 11th. Called by Geo. Barker & Son, veterinary surgeons, to see horse owned by James Colgan, butcher, which was glandered. Ordered horse destroyed.

I consider that the horses I had destroyed July 4th, owned by James Pearson, spread the disease in Paterson. It seems that this horse had been under treatment for some time by a veterinary surgeon and had been driven through the streets of Paterson to the stable of this veterinary surgeon. The above being true it is easy to understand how the disease may have been spread.

September 30th. I was called to Verona, Essex county, to examine a herd of cattle owned by G. D. Pease. The herd consisted of eight head, four of which I found to be suffering with contagious pleuro-pneumonia.

October 1st. Visited Mr. Pease's place and found three of the cows dead. I telephoned to Dr. E. R. Mercer, of Montclair, who assisted me in making autopsies upon the dead animals. Dr. Mercer and myself made an examination of all the cattle in the immediate neighborhood, but we found other herds in good health.

October 3d. Visited Verona.

October 5th. In company with Dr. James C. Corlies, of New-

ark, I visited the Verona herd again. Found one cow which Dr. Corlies agreed with me had better be appraised and destroyed. Made post-mortem examination.

Subsequent visits were made to the herd in question by Dr. Wm. B. E. Miller, of Camden, and Dr. James W. Hawk, of Newark. We were successful in stamping the disease out before other herds became affected.

Somebody at Hackensack, Bergen county, reported, October 11th, an outbreak of hog cholera. I visited Hackensack, but found only one sick hog and could get no authentic information concerning the disease. The sick hog was suffering from indigestion.

In my report for the year 1885, I gave an account of the cases of bovine tuberculosis that had come under my observation. I have discovered many more cases this year.

The investigations and researches of recognized authorities in the sister sciences, human and comparative medicine, leave but little doubt as to the communicability of consumption in cows to the human subject through the milk and meat of affected animals. This does not seem to be generally known, and but few to whom it is known realize how deeply it concerns human health and life. While some of the authorities regard bovine tuberculosis as different in certain important particulars from tuberculosis in man, the differences, if differences they can be called, are supposed to be merely as regards pathological appearances and anatomical structure, but in no way lessening the gravity of the question under consideration.

What more natural and nutritious food than pure milk from a healthy, properly fed animal? But if it be true that milk from consumptive cows can carry the seeds of death to our families, it is time to think what legislation there has been, and what legislation there should be, to arrest the spread and devastation of the disease. Veterinary inspectors have little authority, if indeed it can be said they have any, in dealing with the disease. While pleuro-pneumonia and tuberculosis have caused vast losses of property at home and abroad, yet as pleuro-pneumonia contagion has never been known to be communicated to the human subject, the loss occasioned by it is, in one sense, merely a financial question, whereas tuberculosis as communicated from animals to man involves considerations of a far more solemn nature.

Consumption in the human subject is unfortunately only too familiar to all classes of society. Its victims outnumber those of cholera. More than one-fourth of the adult males dying in New York City are tuberculous, and many of the herds supplying that city with milk are affected in a like proportion. Tuberculosis tends to populous centres.

Epizootic abortis and parturient apoplexy in cows are diseases with the nature of which the farmer should be made familiar. Few diseases cause greater loss to the farmers of our State than parturient apoplexy, and I would respectfully recommend that your honorable board acquaint farmers with all the available information, especially as regards prevention, concerning the disease.

NEW JERSEY
State Agricultural Society.

Annual Meeting held at Trenton, January 19th, 1887.

STATE AGRICULTURAL SOCIETY.

The annual meeting of the stockholders of the State Agricultural Society was held in Trenton, on January 19th, 1887. The following officers and directors were elected for the ensuing year, and the reports of the officers were read. The annual exhibition of the society for 1887 will be held on the society's grounds at Waverly Park, on September 19, 20, 21, 22 and 23. The premium list will be ready for distribution on April 15th and will be sent on application to the recording or corresponding secretary. The entry books will be open one month before the opening, at the office of the society, 764 Broad street, Newark.

PRESIDENT.

Hon. E. A. WILKINSON.....Newark.....Essex county.

VICE-PRESIDENTS.

Hon. AMOS CLARK, Jr.ElizabethUnion county.
Hon. N. S. RUE.....Cream Ridge.....Monmouth county.
Gen. JOHN S. IRICKVincentownBurlington county.
Hon. GEO. A. HALSEY.....Newark.....Essex county.
Hon. WILLIAM J. SEWELL.....Camden.....Camden county.

TREASURER.

CHAS. F. KILBURN.....Newark.....Essex county.

RECORDING SECRETARY.

WM. M. FORCE.....Newark.....Essex county.

CORRESPONDING SECRETARY.

P. T. QUINN.....Newark.....Essex county.

BOARD OF DIRECTORS.

Hon. N. S. RUE.....Cream Ridge.....Monmouth county.
Col. WM. A. MORRELL.....Asbury Park.....Monmouth county.
WM. M. FORCE.....Newark.....Essex county.
Gen. JOHN S. IRICK.....Vincentown.....Burlington county.
Hon. WM. J. SEWELL.....Camden.....Camden county.
ROBERT THATCHER.....Flemington.....Hunterdon county.
Hon. AMOS CLARK, Jr.ElizabethUnion county.

P. T. QUINN..	Newark.....	Essex county.
THOS. T. KINNEY.....	Newark.....	Essex county.
Hon. HENRY C. KELSEY.....	Trenton.....	Mercer county.
JOHN BOYLAN.....	Newark.....	Essex county.
WM. MCKINLEY.....	Elizabeth	Union county.
A. V. SARGEANT.....	Newark.....	Essex county.
JOS. COLYER.....	Newark.....	Essex county.
Hon. GEO. A. HALSEY.	Newark	Essex county.
S. S. BATTIN.....	Newark.....	Essex county.
CHAS. F. KILBURN.....	Newark.....	Essex county.
E. B. GADDIS.....	Newark.....	Essex county.
R. H. ALLEN.....	Chatham.....	Morris county.
Hon. THOS. H. DUDLEY.....	Camden	Camden county.
FERDINAND BLANKE.....	Linden	Union county.
E. A. WILKINSON.....	Newark.....	Essex county.
WM. L. TOMPKINS.....	Newark	Essex county.
FRANKLIN MURPHY.....	Newark.....	Essex county.
GEO. B. JENKINSON.....	Newark	Essex county.
JOHN L. BISHOP.....	Columbus.....	Burlington county.
CHAS. B. THURSTON.....	Jersey City.....	Hudson county.
JAMES SMITH, Jr.....	Newark.....	Essex county.
H. HAYWOOD ISHAM.....	Elizabeth	Union county.
HENRY P. JONES.....	Newark.....	Essex county.

EXECUTIVE COMMITTEE.

H. P. JONES,	WM. L. TOMPKINS,	JOSEPH COLYER,	H. H. ISHAM,
	GEORGE B. JENKINSON.		

FINANCIAL REPORT.

NEWARK, N. J., January 19th, 1887.

Balance, per report of former Treasurer.....	\$3,469 08
Less amounts disbursed, etc., per books of former Treasurer.....	548 53
	<u>\$2,920 50</u>

RECEIPTS.

Balance in Treasury April 21, 1886.....	\$ 2,920 50
General account.....	1,107 00
Fair account.....	24,805 10
Premium account.	225 00
Interest.....	14 02
	<u>\$28,571 62</u>

DISBURSEMENTS.

General account.....	\$ 8,258 10
Fair account.....	4,302 75
Ground account.....	653 74

STATE AGRICULTURAL SOCIETY.

335

Improvement account.....	\$7,152 65	
Premium account.....	9,987 65	
Interest account.....	30 00	
Balance.....	3,286 73	\$28,571 62

CHARLES F. KILBURN, *Treasurer.*

Correct attest :—

WM. L. TOMPKINS,

JOSEPH COLYER,

E. B. GADDIS,

Auditing Committee.

GENERAL ACCOUNT.

RECEIPTS.

Track rents, Mutual Driving Association, balance 1885.....	\$250 00	
Track rents, Waverly Driving Association.....	600 00	
Track rents, for May 30th.....	100 00	
Stall rents.....	54 00	
Track tickets.....	50 00	
Sale of paint, left over from 1885.....	58 00	
Balance	2,151 10	\$3,258 10

DISBURSEMENTS.

Insurance.....	\$276 40	
Supplies for entertainment, 1885.....	48 55	
Merchandise and Supplies.....	26 28	
Directors' dinners.....	280 20	
Taxes.....	296 00	
Post-office box and postage.....	21 00	
Stationery and Printing	59 67	
Dues to National Trotting Association.....	56 00	
Entry Clerk.....	150 00	
Office rent.....	100 00	
Counsel fees and filing papers.....	21 15	
Salaries.....	1,700 00	
Secretary's clerk and expenses.....	97 85	
Secretary and Treasurer State Premium Committee.....	175 00	\$3,258 10

FAIR ACCOUNT.

RECEIPTS.

Gate admissions.....	\$8,164 75
Gate admissions, special.....	75 25

Grand Stand admissions.....	\$1,086 50	
Stand rents.....	4,209 00	
Kennel Club.....	780 50	
Railroad admissions.....	5,475 65	
Speed entries.....	1,875 00	
Programmes.....	125 00	
Society entries.....	597 45	
Stall rents during Fair.....	8 00	
Special privilege.....	2,000 00	
Rebate, advertising.....	8 00	
		<hr/>
		\$24,805 10

DISBURSEMENTS.

Advertising, Printing and Posting.....	\$1,186 72	
Judges, Superintendents and Assistants.....	899 80	
Sundry help and expenses.....	1,208 41	
Police.....	380 50	
Refectory.....	268 95	
Treasurer's office expenses.....	194 40	
Band.....	150 00	
Supplies.....	18 97	
Balance.....	20,002 85	
		<hr/>
		\$24,805 10

GROUND ACCOUNT.

Balance.....	\$658 74
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DISBURSEMENTS.

Salary to Overseer.....	\$416 70	
Help to Overseer.....	29 25	
Feed and horse shoeing.....	92 35	
Haying.....	108 95	
Tools and implements.....	11 49	
		<hr/>
		\$658 74

IMPROVEMENT ACCOUNT.

Balance.....	\$7,152 65
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DISBURSEMENTS.

New Buildings.....	\$6,284 00	
Repairs.....	895 10	
Painting.....	179 00	
Lumber and Posts.....	72 70	
Bell, Judges' Stand.....	4 70	
Grading, and extra help.....	147 15	
Whitewashing.....	70 00	
		<hr/>
		\$7,152 65

PREMIUM ACCOUNT.

RECEIPTS.

Speed premium not trotted for or won.....	\$ 225 00	
Balance.....	9,712 65	\$9,987 65
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DISBURSEMENTS.

Speed premiums.....	\$8,650 00	
Society premiums.....	5,618 65	
Society premiums, 1885.....	7 00	
State premiums, 1885.....	320 00	
Diplomas and Medals.....	347 00	\$9,987 65
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INTEREST ACCOUNT.

RECEIPTS.

Discounts upon sundry bills.....	\$14 02	
Balance.....	15 98	\$30 00
	<hr/>	

DISBURSEMENTS.

Interest upon Bond and Mortgage.....	\$30 00
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CORRESPONDING SECRETARY'S REPORT.

To the Stockholders of the State Agricultural Society :

GENTLEMEN :—Another year has rolled past since this body of stockholders met in this city. During this year there have been about the usual number of ups and downs, hardships and pleasures, hopes and disappointments experienced in the events of this eventful year. From an agricultural standpoint the year just closed has not proved a profitable or a prosperous one to the farmers of this State. The season opened favorably for early spring planting, and the acreage under cultivation was about the same as in the two or three preceding years. The latter part of the month of May was wet and cold, and corn, one of our staple crops, made the planting of it late, and this late planting materially injured the average yield of this important crop and it will fall far below that of 1884 and 1885. The conditions were more favorable for winter grain and the hay crop, which are very important to the farmers in our State. The hay crop was large and well cured before being housed. The fruit crops, large and small, were abundant and equal in quantity and size to our very best seasons. The crops of vegetables, which now form a very large source of income to our farmers in certain sections of the State, in the counties lying near the large cities, yielded bountifully the past season. But the very serious drawbacks came from causes and sources over which the growers can exercise no influence or control, and on which the profits from the year's labors solely depend. These are the prices which farm, orchard and garden produce bring when sent to market. The range of prices last year was unusually low from the beginning to the close of the season, and large quantities of such produce was sold for less than it cost to raise and send it to market. While this condition of affairs was a boon to the

consumer, it has been discouraging and disheartening to the producer, for it is but fair and just that the laborer should reap a fair compensation for his time and capital. But this was not the case with farmers and fruit growers the past year. It is but too apparent that the year's account will show the balances on the wrong side of the ledger in hundreds of instances in this State for the year 1886. There is, as every one familiar with the subject knows, a very considerable surface devoted to the growth of fruits and vegetables in this State, and this surface is gradually increased each succeeding year, as the home markets warrant farmers raising this class of perishable products. Still there is a large surface devoted to the growth of the staples. In 1886 there was planted with wheat in this State 144,528 acres, which yielded in gross 2,260,000, or about fifteen and three-quarters bushels to the acre, and this product had a market value of \$1,943,600, approximating ninety cents per bushel, or a trifle over \$14.16 per acre, not including the straw. There was planted in Indian corn in our State in 1886 346,866 acres, which yielded 9,418,000, an average of only about twenty-seven and half bushels to each acre planted, and the gross amount realized for this crop was \$4,709,000, or a fraction less than fifty cent per bushel, or at the rate of \$13.50 per acre, not including the value of the stalks for feeding purposes. There was planted in oats for the same year 137,455 acres, which yielded 3,734,000 bushels, or an average yield of only twenty-seven and a half bushels for each acre sown, which brought the farmers \$1,344,240, or about twenty-eight cents a bushel. I mention these facts at this time concerning these three staple crops for the double purpose to show, first, the very low average yield of these crops in this State, and secondly to show the wide difference in yield of the same crops, where high cultivation is practiced in different parts of the State by some of our best farmers, in sworn returns for competition for the State premiums offered by the State through the medium of this Society for the past year on lots of five acres. In competition for these premiums, the State Premium Committee had presented to them verified statements of eighty-nine bushels of shelled corn to the acre, or three times the average yield of the State, and they had also fifty-four bushels of oats the yield per acre, or twice that of the State average, and forty-five bushels of wheat per acre.

Such facts will show clearly to any observer, that notwithstanding all that has been accomplished by the State Society and county organizations to further and develop our agricultural resources, there is still a large field for improvement, and that our cultivated land, with all our natural advantages, yields not more than one-third of what it is capable of doing under a better system of cultivation. Such a system this Society and other similar associations have continually and persistently urged by all the means and agents in their power. The offering of these premiums by the State has brought prominently before our farmers the facts, that with a better system of culture and liberal and judicious application of fertilizers, the annual products of our farms can be more than doubled, and this without any extra labor for the planting or reaping of the crops. There is another and very important fact developed by an examination of these State premium crops, which is worthy of the serious consideration of our farmers, especially to those whose farms are located near the large markets, and their land is suitable for the growth of vegetables. The State Premium Committee were awarded a premium the past year for a crop of onions; the yield per acre of this crop was seven hundred and forty-eight bushels, and these have been worth in open market seventy-five cents per bushel, or \$561.00 per acre. Or in other words the product of one acre of onions has yielded the same money value of about thirty-five acres of wheat and thirty-seven acres of Indian corn, or a larger number of acres sown with oats. These, with similar facts brought out from year to year by the publication of these crop returns by the State Premium Committee, are sure to awaken an interest and eventually lead to a better and more profitable system of husbandry in wide sections of our State, on land capable of producing maximum returns of fruits or vegetables when properly cultivated. With our favorable surroundings, with home markets for perishable products, having a higher money value to the acre than cereals, self interest will induce our farmers to devote more surface to these crops in the future. The State Premium Committee should reduce the list, and largely increase the premiums in live stock and farm, orchard and garden products for the year 1887. At the same time the Society should carefully revise the premiums in certain departments of their own list, which if done will increase

the number of entries and add more interest to the exhibition. In the Jersey cattle class the premiums should be made larger, equal in amounts to those offered by the neighboring States. This is why the number of entries in this class dropped off at our last annual fair. A large number of choice cattle were sent to the Pennsylvania State Fair, held on the same days as our own State. Larger premiums for stallions and brood mares by the Society will draw better and more exhibits in this department. In the art department the amount offered in premiums is only \$125, and by special premiums given by the judges for articles of merit the total awards foot up to \$300, instead of \$125 offered in the schedule. This department is becoming one of the most interesting of our annual exhibitions and merits attention from the officers of the Society for the present year. The premiums offered by the Society for silk products has not up to this time been successful in getting a creditable display. At no time has the total exhibit equaled in value the sum the Society offers in premiums, and the \$350 that the Society has annually offered for dairy utensils has failed to attract manufacturers of such utensils, even to make a moderate showing on our grounds in this department. In the other departments of the annual exhibition there has been a healthy and steady growth of exhibits, and not only has the number increased from year to year, as will be seen by the subjoined tables for the last ten years, but the quality has improved at about the same ratio. This increase in quantity and quality is traceable to earnest and systematic work on the part of the Committee and officers of the society, under whose direct management and direction the multiplicity of work is planned and carried out from year to year. During the last year, the officers named left no stone unturned to make the exhibition the crowning one in the history of the Society. Early in the year the schedule of premiums was printed and distributed. Large and small bills were distributed by thousands in places where they were supposed they would do the most good, to attract the attention of manufacturers of agricultural implements, stock breeders in and out of the State, to farmers, gardeners and fruit growers. Favorable arrangements were perfected with the railroad companies for the transportation of goods to and from the fair grounds, and the carrying of passengers at reduced rates,

from all points in the State. It is but fair and just to say here that the rail service, during the week of the fair, was as near perfect and efficient as the most sanguine could desire. The needed improvements on the grounds were commenced early in the season and completed a week before the exhibition was opened. These improvements consisted in the construction of a large frame building for the use of the "State Kennel Club" for a bench show held at the same time with the fair. The answer as to whether it will pay will be found in the report of the treasurer. The grand stand was lengthened and the extra receipts from that source will corroborate the good judgment of the Executive Committee in making this improvement. The comfort of visitors was largely added to by the construction of a number of commodious closets at different points on the grounds, and many were the quiet thanks expressed for this much-needed accommodation. The horse stalls and the cattle sheds were put in good repair before the opening day, as well as all other necessary preliminary work, to name which would be to write a long catalogue.

The week of the fair opened auspiciously, and every noticeable sign gave promise of the most successful fair ever held by this Society. This would undoubtedly have been the case, if providence had blessed us with fair weather on Thursday, the principal day for visitors. But unfortunately for the Society and its stockholders, Thursday was wet and cheerless, and caused a loss in actual cash receipts of not less than \$8,000, and if this amount could be added to the receipts of the Treasurer's figures it would swell them beyond all former years. The visitors and receipts on Tuesday, Wednesday and Friday were all larger than on the corresponding days of previous years, but the rain on Thursday prevented thousands from coming to the grounds, and chilled the exuberant spirits of the officers and Board of Directors for the year 1886. Leaving out the loss of receipts by the rain storm on Thursday, the exhibition was a great success. The exhibit of thoroughbred stock in competition for the State Premiums, exceed largely in numbers those shown at any previous exhibition held by this Society. The following table gives the number shown in each class as taken from the Society's entry books. Herd prizes were offered for Jerseys, Holsteins, Ayrshires, Shorthorns and grades. We received entries for nineteen herds, consisting

of one bull and four cows each. In the same classes for single animals there were shown thirteen bulls and fifty cows. This makes one hundred and fifty-eight head of finely bred neat cattle shown on the grounds for State premiums. Such a number of fine animals and such sharp and lively competition among breeders is sure to result in doing great good in improving the dairy stock of our State, through the medium of this Society.

The exhibition of sheep and swine was far above the average. There were ten pens of ewes and fifteen pens of rams, all imported stock, and eighteen boars of the different breeds shown in competition for the State premiums.

In the Society classes the exhibit of neat thoroughbred cattle compares well with previous years. I have divided the various breeds and the table following will give an idea of the number in competition of each :

Jerseys.....	Bulls,	10	Cows,	29	Guernseys.....	Bulls,	7	Cows,	9
Ayrshires.....	"	16	"	26	Brown Swiss.....	"	7	"	8
Holsteins.....	"	10	"	14	Herefords.....	"	3	"	5
Short Horns.....	"	4	"	17	Grades.....	"		"	41

This will make a total of neat cattle on exhibition, at our last annual fair, of three hundred and sixty-four head, which in every respect would compare favorably with the same breeds exhibited at any State exhibition in this country.

The entries in the poultry department increase steadily each succeeding year, and our building is inadequate and it will have to be enlarged very soon to accommodate the wants of this interesting and instructive part of our annual exhibition, the growth of which has been phenomenal.

There is no longer a question of doubt among those of our Board of Directors who have had charge of the horse department for the past few years, that the Society should provide more and better stalls for horses, both in the fancy and speed departments. This department is one of the most attractive on our grounds and the Society should take steps to improve and enlarge the present accommodations for horses, in the construction of more and better stables before the next annual exhibition. They are needed and the investment will add largely to the revenue of the Society.

I have for the past three or four years urged the Society to construct a permanent building for the exhibition of the products

of the farm, garden and orchard. It is an important and popular department, that calls for better protection than is afforded by the big tent. In fact this department has grown so rapidly that the tent no longer gives the room required to exhibit the goods, and exhibitors find fault with the limited and insecure protection to their goods, and the danger of the tent being blown down during the exhibition.

The growth and popularity of this Society's exhibitions are best answered by a close examination of the entry books since 1874. The subjoined table gives the number of entries in each department for the past ten years, and the total for each year during that period. The total number of entries in 1886 was nearly three times as many as they were in 1874 and there is a singular uniformity in this increase for each successive year. They are as follows :

TABLE OF ENTRIES FROM 1874 TO 1886.

DEPARTMENT	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	EXHIBITS.
Special State	59	70	106	106	148	124	170	146	149	106	155	140	129	{ Horses, cattle, sheep and swine.
Speed.....	52	98	105	99	98	149	....	103	126	107	66	107	104	Speed.
Department A	107	72	68	73	76	78	109	62	75	46	....	74	78	Horses.
" B.	392	431	633	715	818	757	950	963	837	845	984	972	1187	{ Cattle, sheep, swine and poultry.
" C.	817	961	1005	1456	1140	1763	1697	1492	1467	1913	1998	2027	1832	Farm Products.
" D.	548	701	705	1416	946	702	1122	1091	1121	1182	1269	1113	1258	Ladies' needle work, etc
" E.	164	182	233	256	291	415	540	798	521	477	639	729	518	Canned goods, honey, etc
" F.	32	154	139	207	192	263	275	232	207	338	219	321	324	Farm machines, tools, etc
" G.	69	72	16	40	47	28	49	50	50	57	83	94	64	Carriages, wagons, etc.
" H.	29	52	36	37	....	211	204	{	86	64	52	57	34	Household furniture, woolen goods.
" I.									121	83	85	112	102	Manufactured goods.
" K.	97	114	115	136	214	142	177	183	255	300	219	355	380	Fine arts, etc.
" L.	81	97	88	140	159	15	34	72	77	35	60	49	40	Sanitary appliances.
" M.	....	....	....	....	....	....	....	....	35	16	24	37	39	Dairy goods.
Total.....	2447	3004	3249	4681	4129	4687	5491	5394	4987	5559	5835	6184	6296	

The total number of entries in all the departments in 1874 was 2447, and in 1886 they reached 6296.

Before closing this brief outline of the work accomplished by the Society for the year 1886, I would be remiss in my duty without referring to the sad loss this Society has sustained in the death of two active members of the Board of Directors since our last annual meeting. Mr. E. G. Brown, of Elizabeth, was an active and earnest member of this Society for a quarter of a century. A part of that time he was Superintendent of the grounds and

one of its vice presidents. At the time of his death, last spring, the Board of Directors deeply mourned his loss, for by his kind and gentle nature, his honest and manly action, his sterling traits of character, he endeared himself to his associates, all of whom deplore the loss of a friend, a trustworthy counsellor, and an influential citizen. Later in the season the Board of Directors was called together to pay their last tribute of respect to one of their own members, Thomas W. Dawson, a citizen of high standing in the community in which he lived. During his association with this Society he was earnest and active in promoting its welfare and prosperity. In the death of these two gentlemen this Society met with a severe loss, and the community lost two estimable citizens.

RUTGER'S SCIENTIFIC SCHOOL.

(STATE AGRICULTURAL COLLEGE), NEW BRUNSWICK, N. J.

RUTGER'S SCIENTIFIC SCHOOL.

(STATE AGRICULTURAL COLLEGE), NEW BRUNSWICK, N. J.

The Board of Visitors to the State College for the benefit of agriculture and the mechanic arts desire to make known to their fellow-citizens of New Jersey the present condition and advantages of the institution which the State has put in some measure under their charge. The friends of education for those engaged in industrial pursuits early recognized the fruitful benefits of scientific studies to their arts. Chemistry, natural philosophy, surveying, engineering, draughting, geology, mineralogy, the sciences relating to plants and animals, with a good English education, were thought to furnish the best training for success in farming, mechanics and manufactories. Petitions were sent to Congress, asking the General Government to establish and endow such institutions in the different States, and in 1862 an act was passed "Donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts." The States have all accepted these donations. That given to New Jersey was accepted by the Legislature of 1864, and the lands donated were sold, and the proceeds, amounting to \$116,000, invested in the State funds; and the interest accruing from them, which is \$6,960 a year, was appropriated as a permanent endowment exclusively for the support of teachers in that department of Rutgers College which is known as Rutgers Scientific School. Many of the States made special appropriations for the purchase of farms, erection of buildings, and for assistance in paying necessary expenses, but in New Jersey all this was done by the Trustees of Rutgers College and no assistance for these purposes has ever been received

from State funds. The Governor and Senate were empowered to appoint the Board of Visitors, two from each Congressional District, whose duty it is to visit the institution at least twice in each year, and who possess general powers of supervision and control, with authority to report to the legislature such recommendations as to them may seem proper.

The work began under this act in 1865, and has been continued without interruption now for twenty-one years. Forty scholarships, free of all tuition fees, are the property of the young men of the State, the number being apportioned among the counties, somewhat according to the population. If the number assigned to any county is not filled there, it may be filled from any other county which makes application.

The courses of study to be taught in the institution have been the subjects of careful consideration. The wording of the United States law which furnishes the endowment for the College is that "The leading objects shall be, without including other scientific and classical studies, and including military tactics, to teach such branches of *learning* as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The College, then, is to teach branches of *learning* not branches of the *arts*, but such sciences as explain the *principles* which underlie the arts—such sciences as require apparatus, experiments and observation to make them fully understood, and such other branches of learning as may best fit them, as citizens, to speak or write upon the subjects which they have studied, as well as to put them in practice and experiment. The subjects of study are such as cannot be profitably studied in the common schools or by boys, but such as need the arrangement and instruments for surveying, draughting, and the laboratories for chemical and philosophical experiments, and the farm and stock for field and farming practice. These are provided, and the College is doing its work well. The forty scholarships have been filled this year, and there are now thirty-six occupying them, the others having been left vacant by some change of purpose in the student appointed or by failure in preparation.

There have been one hundred and fifty-five students who have graduated, and one hundred and fifty others who have taken partial courses of study and left to engage in work. They have found ready employment and are using well the learning they have here acquired as chemists, geologists, surveyors, engineers, farmers, mechanics, manufacturers, or in trade. They are educated and enterprising men, engaging in such work as they are competent to do, and as offers adequate compensation to young men whose only capital is their investment in an education.

The Board of Visitors is as follows:

	<i>Residence.</i>	<i>Terms Expire.</i>
FIRST CONGRESSIONAL DISTRICT.		
DAVID A. SHREVE, ESQ.....	Haddonfield.....	1888.
I. M. SMALLEY, ESQ.....	Roadstown.....	1888.
SECOND CONGRESSIONAL DISTRICT.		
HON. WILLIAM PARRY.....	Cinnaminson.....	1887.
WILLIAM S. TAYLOR, ESQ.....	Burlington.....	1888.
THIRD CONGRESSIONAL DISTRICT.		
JOHN V. N. WILLIS, ESQ.....	Marlboro.....	1888.
JAMES NEILSON, ESQ.....	New Brunswick.....	1888.
FOURTH CONGRESSIONAL DISTRICT.		
JOHN DE MOTT, ESQ.....	Middlebush.....	1887.
CALEB WYCKOFF, ESQ.....	Belvidere.....	1888.
FIFTH CONGRESSIONAL DISTRICT.		
HENRY P. SIMMONS, ESQ.....	Passaic.....	1888.
WM. H. DE WOLF, JR.....	Hackensack.....	1887.
SIXTH CONGRESSIONAL DISTRICT.		
HON. GEORGE H. HARTFORD.....	Orange.....	1888.
WM. M. FORCE, ESQ.....	Newark.....	1887.
SEVENTH CONGRESSIONAL DISTRICT.		
ABRAHAM W. DURYEE, ESQ.....	New Durham.....	1888.
JAMES STEVENS, ESQ.....	Jersey City.....	1887.

OFFICERS:

HON. WILLIAM PARRY, *Chairman.*

GEORGE H. COOK, *Secretary.*

They are nominated by the Governor, and confirmed by the Senate. The presentation of names of persons to fill the vacancies in the Board, some of which vacancies occur every year, would doubtless receive proper attention from the Governor and Senate, as their desire is to promote the educational interests of the people.

A full report on the courses of study, the means provided for instruction, and the condition of the State scholarships, is made to the Legislature every year, and is printed and circulated as one of the legislative documents, and advertisement of the times of receiving students has been published in the county papers for several years past.

Full information can always be obtained by addressing the President or Secretary of the College, or letters addressed to members of the Board of Visitors will receive prompt attention. For copies of the annual report address the librarian of the College.

NEW JERSEY STATE AGRICULTURAL EXPERIMENT STATION.

OFFICERS OF THE BOARD.

WILLIAM S. TAYLOR, ESQ.....President.
HON. WM. PARRY.....Vice President.
JAMES NEILSON, ESQ.....Treasurer.
JOHN DEMOTT, ESQ.....Secretary.

EXECUTIVE OFFICERS.

GEORGE H. COOK, New Brunswick.....Director.
ARTHUR T. NEALE, New Brunswick.....Chemist.
EDWARD B. VOORHEES, New Brunswick.....First Assistant Chemist.
JOSEPH L. HILLS, New Brunswick.....Second Assistant Chemist.
HENRY R. BALDWIN, JR., New Brunswick.....Third Assistant Chemist.
IRVING S. UPSON, New Brunswick.....Clerk.

DAVID L. SCUDDER, New Brunswick.....Laboratory Attendant.

BOARD OF MANAGERS.

HIS EXCELLENCY LEON ABBETT, Trenton,
Governor of the State of New Jersey.
MERRILL E. GATES, PH.D., LL.D., New Brunswick,
President of the State Agricultural College.
GEORGE H. COOK, LL.D., New Brunswick,
Prof. of Agriculture of State Agricultural College.

FIRST CONGRESSIONAL DISTRICT.

	<i>Residence.</i>	<i>Terms Expire.</i>
DAVID A. SHREVE, ESQ.....	Haddonfield	1886.
L. M. SMALLEY, ESQ.....	Roadstown	1886.

SECOND CONGRESSIONAL DISTRICT.

HON. WILLIAM PARRY.....	Parry	1887.
WILLIAM S. TAYLOR, ESQ.....	Burlington	1886.

THIRD CONGRESSIONAL DISTRICT.

JOHN V. N. WILLIS, ESQ.....	Marlboro.....	1886.
JAMES NEILSON, ESQ.....	New Brunswick	1886.

FOURTH CONGRESSIONAL DISTRICT.

JOHN DEMOTT, ESQ.....	Middlebush.....	1887.
CALEB WYCKOFF, ESQ.....	Belvidere	1886.

FIFTH CONGRESSIONAL DISTRICT.

HENRY P. SIMMONS, ESQ.....	Passaic	1886.
WILLIAM H. DEWOLF, JR.....	Hackensack	1887.

SIXTH CONGRESSIONAL DISTRICT.

HON. GEORGE H. HARTFORD.....	Orange	1886.
WILLIAM M. FORCE, ESQ.....	Newark.....	1887.

SEVENTH CONGRESSIONAL DISTRICT.

ABRAHAM W. DURYEE, ESQ.....	New Durham.....	1886.
JAMES STEVENS, ESQ.....	Jersey City.....	1886.

[The report can be obtained from

DR. GEORGE H. COOK,
New Brunswick.]

NEW JERSEY STATE HORTICULTURAL SOCIETY.

OFFICERS FOR 1887.

PRESIDENT.

ALEX. W. PEARSON.....Vineland.....Cumberland county.

VICE PRESIDENTS.

GERRY VALENTINE.....Hammonton.....Atlantic county.
 E. S. CARMAN.....River Edge.....Bergen county.
 HENRY I. BUDD.....Mt. Holly.....Burlington county.
 EZRA STOKES.....Berlin.....Camden county.
 JOS. D. COLE.....Deerfield.....Cumberland county.
 JOSEPH B. YARD.....Newark.....Essex county.
 JOHN REPP.....Glassboro.....Gloucester county.
 C. W. IDELL.....Hoboken.....Hudson county.
 E. M. HEATH.....Locktown.....Hunterdon county.
 JOHN M. WHITE.....New Brunswick.....Middlesex county.
 FRANKLIN DYE.....Trenton.....Mercer county.
 JNO. S. GREEN.....Morristown.....Morris county.
 D. A. VANDERVEER.....Manalapan.....Monmouth county.
 GEO. C. WOOLSON.....Passaic.....Passaic county.
 RUFUS W. SMITH.....Elmer.....Salem county.
 D. C. VOORHEES.....Blawenburg.....Somerset county.
 E. P. BEBEE.....Elizabeth.....Union county.

RECORDING SECRETARY.

E. WILLIAMS.....Montclair.....Essex county.

CORRESPONDING SECRETARY.

RALPH EGE.....Hopewell.....Mercer county.

TREASURER.

CHARLES L. JONES.....Newark.....Essex county.

EXECUTIVE COMMITTEE.

WM. R. WARD.....	Newark.....	Essex county.
C. W. IDELL.....	Hoboken.....	Hudson county.
J. M. WHITE.....	New Brunswick.....	Middlesex county.
E. P. BEBEE.....	Elizabeth.....	Union county.
JOHN C. VAN DUREN.....	Manalapan.....	Monmouth county.

FRUIT COMMITTEE.

JESSE B. ROGERS.....	Milburn.....	Essex county.
WM. H. GOLDSMITH.....	Newark.....	Essex county.
CHARLES BLACK.....	Hightstown.....	Mercer county.
ELI MINCH.....	Shiloh.....	Cumberland county.
DAVID BAIRD.....	Manalapan.....	Monmouth county.

FLOWER COMMITTEE.

J. B. WARD.....	Newark.....	Essex county.
C. W. IDELL.....	Hoboken.....	Hudson county.
THEODORE EDMUNDS.....	Bridgeton.....	Cumberland county.

VEGETABLE COMMITTEE.

THEO. F. BAKER.....	Bridgeton.....	Cumberland county.
FRANKLIN DYE.....	Trenton.....	Mercer county.
JOSEPH BURT.....	Bridgeton.....	Cumberland county.

DIRECTORS TO STATE BOARD OF AGRICULTURE.

E. WILLIAMS.....	Montclair.....	Essex county, two years.
WM. R. WARD.....	Newark.....	Essex county, one year.

[For report of New Jersey State Horticultural Society complete send to E. Williams, Secretary, Montclair, Essex county.]

CRANBERRY GROWERS' ASSOCIATION.

OFFICERS

OF THE

AMERICAN CRANBERRY GROWERS' ASSOCIATION.

1887.

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STANDING COMMITTEES.

Standard Measure—Crane, Rider, Satterthwaite, Collings and Chew.*Foreign Trade*—French, Rider, S. H. Comings.*Scientific Investigations*—Brakeley (J. H.), Dr. Goodell, Prof. George H. Cook.*Insects*—Brakeley (J. H.), Holman, Applegate.

REPORT.

To the State Board of Agriculture of New Jersey :

GENTLEMEN :—The American Cranberry Growers' Association is a product of New Jersey and continues to be honored by representation in your body, although it has answered very much the character of a National organization.

It being the only organization of the kind in the country, it was thought that its usefulness might be greatly extended by opening its doors to membership of cranberry growers from outside the State. This it did, and its membership has grown to include nearly all the prominent growers in every cranberry growing district of the country. This enlargement of its borders has been productive of great good to all concerned and we trust has rendered us no less entitled to the fostering care shown us by your body in the past.

The following is gathered from the last printed report of the Association and will give a correct idea of the scope of our work.

PRESIDENT'S ADDRESS.

GENTLEMEN—During the past two years a number of interesting phases have presented themselves in cranberry matters, to a few of which your attention will be briefly called. And prominent among these is the movement of the past year's crop and the peculiar circumstances attending it. But as this properly falls within the province of our able Statistician, I leave it for him to discuss, and pass on to other matters.

Very large crops, like those of the last two, in consecutive years, is phenomenal—I think unprecedented in the history of cranberry culture. Large crops are nominally the result of large plantings, and we naturally look to an increased acreage under

cultivation for an explanation of the recent large crops; and justly so, to a certain extent, as considerable new planting has come into bearing during the past two years, both in New England and on Long Island, as well as in New Jersey. But the wonderfully favorable seasons for the development of the cranberry which prevailed in 1885 and 1886, in my judgment, did much more to over-stock the market than any other cause. Let us look at the matter.

Any one who will carefully examine the productive forces of nature cannot fail to be astonished at the abundance of the provision made for the continuance of every species which has been created. This super-abundance of provision prevails in every portion of nature's vast domain. The adult carp, for instance, will produce about 500,000 eggs, and the cod and some other marine fishes, three or four times as many; so if but one in five hundred escape the dangers which surround the ova and young fish, vast numbers will still reach maturity.

And on the same principle is the cranberry plant constructed. In August of each year, a tiny bud is formed at the terminus of each spray, containing, in embryo, a shoot with seven blossoms, capable of developing into fruit. If these escape the tip-worm, and other casualties to which they are liable as the spring advances, they open and perform the functions allotted them. Then the time of special danger arrives. Frequently a greater or less number of them are blasted by the scorching suns of June. Or if the spring is a cool and late one, a portion of the bloom will be delayed till the last of July or early August—too late for the fruit to mature. Or it may be the bees; honey, hermit and other varieties are not sufficiently numerous to do the work of fertilization thoroughly. As a result, in ordinary seasons only about ten per cent. of the blossoms become fruitful. Were the seven blossoms on each upright, on a bog fairly covered with vines, all to mature their fruit, the yield would be from one thousand to fifteen hundred bushels to the acre. In the very favorable season of two years ago, and probably also last season on some bogs, fully thirty per cent. of the blossoms became fruitful. In the former year, at the Lahaway plantation, six acres yielded nineteen hundred and four bushels, and from another bog of seven acres twenty-two hundred and thirty-four bushels were

gathered. And some other portions of the State were quite as productive.

The question very naturally arises, are such favorable conditions for the development of the fruit likely to extend to coming years? Why should they? They have been of rare occurrence in former years, and unless there is a permanent change in our climate, which is not probable, they are not likely to occur soon again. And yet they may.

While the direct result of very large crops of any article of consumption is disadvantageous to the producer, the ultimate result is often beneficial. Not only does the consumer enjoy the great abundance and the low prices, but in the case of cranberries their consumption is extended to regions where their use was unknown before. The influence of the immense crop of '85, in this particular, was very apparent the past season. So great was the consumption the early part of this year that Thanksgiving had barely passed before it was discovered that but a small portion of the largest crop ever raised in New Jersey still remained in the hands of growers. The result you know.

Another matter worthy of notice is the continued disposition to discriminate against the product of our Jersey bogs, in favor of an inferior berry having the single merit of being better looking. The superiority of the "Early Black," so highly prized and sought after by the great majority of consumers, is only skin deep. Ripening early (among cranberries what the Fall Pippin is among apples), it soon becomes over-ripe, and loses that peculiar, delicate flavor which characterizes the cranberry in its best estate and makes it so luscious a fruit. And not only so, like other over-ripe fruit, to a considerable extent it loses its capacity to jelly. So the prudent housewife who has purchased a quart or more of Early Black cranberries at an extra price, and thinks herself fortunate in having secured such nice ripe berries, has really gotten an inferior article—one that will furnish her a smaller quantity of sauce, and that of a poor quality. A friend informs me about a year since, when good berries could be bought for about \$1.50 per crate, he saw, in one of the largest retail grocery stores on Broadway, New York, cranberries retailing at fifteen cents per quart. The berries were not above medium for size, with many soft ones among them. But they

were Cape Cod berries, and people were willing to pay such prices for Cape Cods! It was an exhibition of wisdom like this, I fancy, which led one of Shakespeare's ærial characters to exclaim: "What fools these mortals be!"

Cannot the American Cranberry Growers' Association do some missionary work in this direction? Through the press, and by other means that might be devised, special efforts should be put forth to set the public mind right on this subject. Justice to ourselves, as well as to the vast army of cranberry consumers, demands that this should be done.

The past year has brought to my notice some facts in regard to insect-enemies worthy of serious consideration. To one of these your attention was called at our last September meeting—the appearance of a new and destructive insect on a bog on Long Island, recently planted with vines procured from Cape Cod. As then stated, but little is known of its habits. But it presented a formidable aspect in this respect, that the second brood was not entirely destroyed by re-flowing. Inquiries brought out the statement that it was unknown on the Cape. The probability is, that it existed there, but in such small numbers as to do no serious injury, and so not to attract attention. But on Long Island it found surroundings more favorable for its development, and hence multiplied rapidly and became very formidable. Climate has a remarkable effect on insect life. The spar-worm, which in New England, at times, sweeps over entire bogs, consuming every green thing, is known to exist in some of our New Jersey bogs, but has never yet been known to do any serious injury. And the berry-worm, which has had an existence on some of our oldest bogs since their first planting, I have never known to do any serious harm till last year. Great caution will be needed to prevent this new-comer from becoming established among us. In order to prevent the introduction of this and other insect-enemies, in procuring vines from a distant region, care should be taken so to treat them, before planting, as to destroy any vestige of insect-life that may have accompanied them.

Another fact of interest to growers: About a month ago in passing a cranberry-house, where berries were being prepared for market, I noticed, among the refuse thrown out, a large quantity of the shriveled, dried rinds of the berry. I recognized, at once,

the work of either the grasshopper or the berry-worm. An examination showed it to be the work of the latter. The proprietor, an intelligent man, complained of having gathered a very small crop, caused, as he said, by the late flowing of portions of his bog by his neighbor immediately above him. He evidently had mistaken the real cause of his loss. I will observe here that the presence of the berry-worm on a bog may be detected by the berries, in August, becoming prematurely red; while in the gathered crop, the hole by which it enters the berry can often be seen in the dried rind; while the cricket and grasshopper, being in pursuit of the seeds only, eat away a considerable portion of the pulp, which also is noticeable.

I have known of the existence of this insect for the past twenty years, having reared the parent moth from the larvæ found in the berries about that long ago, though it was not described and classified until two or three years since. It probably does more harm, on many bogs, than is generally supposed. As the moth is very shy, and, when disturbed, flies a long distance, it is rarely seen; and as the prematurely-colored berry, caused by the larvæ having burrowed in it, may be mistaken for an early-ripe berry, it is not remarkable that the casual observer should fail to detect its presence.

At the present time, the danger of over-production is the *bête noir* of the intelligent cranberry grower. So, in view of this danger, the advent of new destructive insects is not to be dreaded so much after all, as they may serve as a check on over-production. The trouble is, however, that they will not always continue their attention to his neighbors' bogs, but pay their respects to his, also. And this is not pleasant to selfish human nature.

This matter of over-production is worthy of consideration. It is clear, I think, that the area under cultivation, in cranberry vines at the present time, is sufficient to supply the wants of the civilized world, when the crop is a medium one; while an unusually large crop gives a surplusage and entails a serious loss. If the plantations are much enlarged, even a light crop will supply all that will be consumed, while an ordinary one will be more than is needed. Some years since, when a similar crisis in cranberry matters was pending, the rot or scald came and put a check on increased planting. And this check was supplemented by the

appearance of a new and most formidable insect-enemy. Then, as prices advanced because of the small crops produced, new bogs were put out, and partly, at least, gave us the disastrous season of 1885. And because of this, much less new planting was done last year than otherwise would have been done. As, however, the present crop is likely to go out at good prices, there will again be a tendency to enlarge the area under cultivation during the coming season. While this is to be deprecated it is quite possible, I think, that a check on this is already in course of preparation, coming to us, as before, in the form of insect life. We have already seen how destructive the berry-worm may become. At present I know of no successful method of checking its ravages, and I am not aware that any other person does. True, the Entomological Department at Washington has suggested a remedy, but the one recommended I know to be of very doubtful utility. Re-flowing is out of the question, unless we conclude to sacrifice a crop of berries. And then there is no certainty of success without the destruction of the vines also.

And the *tip worm*, too, which is known to have a footing among us, may at any time show itself in force. Its approaches are almost as hidden as that of "the pestilence that walketh in darkness." It comes, does its work of destruction, and seemingly goes, but only to assume a hidden form, to return again next year, when "pastures new" will have been provided by nature for it. The failure of the vines to blossom will tell us that it has been there, and that is about all we know of it.

And who can say that the spar-worm will not soon have adapted itself to its surroundings, and show itself in countless myriads, as it does in New England, and as the *Anchylopinia* has already done here? Were it so to multiply, few, if any, would be prepared to combat it.

From the present outlook, then, what course is it best for the prudent cranberry grower to pursue? Not, in my judgment, to enlarge his plantations, but to bestow more care and attention upon those already under cultivation. Let him employ his surplus capital (if he is fortunate enough to have any these times) in renovating his old bogs. If taken in time, they can be thoroughly renewed at moderate expense, and will make quicker and more certain returns than money expended in putting out

new bogs. The man who will do this will be in better shape to meet either overwhelmingly large crops or small ones, than he who pursues the opposite course.

STATISTICIAN'S REPORT.

The cranberry crop of 1886, as figured and estimated from the October crop reports, and presented to the special meeting held near the last of that month, was set down, in round numbers, as follows :

	Bushels.
New Jersey.....	225,000
New England and Long Island.....	285,000
Wisconsin, &c.....	35,000
Total.....	545,000

Additional verbal reports presented at that meeting, by the members present, seemed to increase the New Jersey crop to two hundred and thirty-seven thousand seven hundred and forty bushels.

I have spent an unusual amount of time and labor on the present report, in an endeavor to present the crop movement in detail, as well as compactly, in tabulated form, showing at a glance the amounts by each railroad to each destination, by months and in totals, and as compared with same period in the previous year, as follows :

Here follow tables, showing the crop movement by months, from the commencement of the season to January 1st, 1887, over each different line of railroad.

Table No. 1, from New Jersey to Philadelphia.

Table No. 2, from New Jersey to New York.

Table No. 3, from New Jersey to the West.

Table No. 4, from New England to different commercial centres, and

Table No. 5, From Wisconsin to Chicago.

Reckoning the barrel as three bushels and the crate as one bushel, the entire movement from last crop of the Atlantic States, as shown in the preceding tables—with specified estimated additions—to January 1st, 1887, and compared with same time of the preceding year, is tabulated as follows in bushels :

TOTAL SHIPMENT FROM NEW JERSEY.

DESTINATION.	1886.			1885.		
	Reported.	Additional. (Estimated)	Total.	Reported.	Additional. (Estimated)	Total.
Philadelphia	85,846	5,000	90,846	70,680	5,000	75,680
New York	82,857	8,000	90,857	82,687	8,000	90,687
West, direct	59,058	.....	59,058	9,660	.....	9,660
Home Markets .....	.....	6,000	6,000	.....	6,000	6,000
Totals	177,261	14,000	191,261	112,977	14,000	127,018

TOTAL SHIPMENT FROM NEW ENGLAND.

DESTINATION.	1886.			1885.		
	Reported.	Additional. (Estimated)	Total.	Reported.	Additional. (Estimated)	Total.
New York	180,568	10,000	190,568	124,764	10,000	134,764
Boston	48,926	10,000	58,926	51,868	10,000	61,868
Philadelphia	24,687	5,000	29,687	8,298	10,000	18,298
Home Markets .....	.....	5,000	5,000	.....	10,000	10,000
West, direct	87,706	.....	87,706	9,077	.....	9,077
Totals	241,882	30,000	271,882	193,502	40,000	233,502

The New Jersey crop estimate of October last being two hundred and twenty-five thousand bushels, the crop movement as above, indicates thirty-three thousand seven hundred and thirty-nine bushels still unmoved.

In like manner there seems to be still on hand, in New England, thirteen thousand one hundred and eighteen bushels.

The reported movement from Wisconsin to Chicago amounts to only eight thousand eight hundred and ninety-nine bushels. If, as heretofore calculated, one-quarter of the crop does not go to Chicago, the entire crop of the State would be eleven thousand eight hundred and fifty-two bushels, instead of the October estimate of thirty-five thousand.

The Fruit Growers' Trade Company have exported about six hundred crates, which, it is believed, will average a fair profit. I am not aware of other exports, though some may have been made.

THE COURSE OF TRADE.

The New York market for strictly choice to fancy Cape Cod cranberries was fairly opened about the middle of September at \$6.00@ \$6.50 per barrel, against \$7.50@ \$8.00 in 1885. Before the middle of October, prices of this class of cranberries had declined to \$5.50@ \$6.25, and these figures prevailed, with but slight variation, until the middle of November, when the Thanksgiving demand began to be felt, and some improvement occurred, especially upon the highest grades. As usual, the Cape Cod fruit had almost a monopoly of the New York market, during the fall months, as the tables of movement show. New Jersey cranberries, in the meantime, had, of course, very little chance, and quotations for some fairly-colored sorts stood at about \$1.25 @ \$1.50 per standard crate ; but these figures were gradually exceeded, with an increasing demand, after about the middle of November.

The expected dullness immediately after Thanksgiving did not occur, neither was there much prompt advance. But about the first of December there seemed to be a simultaneous rush from New York and Philadelphia to secure some of the remaining fruit, in anticipation of higher prices. It had not the appearance of an organized "ring," but of a coincident impulse awakened from a long dormant state.

One old man who had been circulating about all the fall, making ventures when all others stood aloof, found his occupation sud-

denly gone, and, deeming discretion the better part of valor, he at once left the field to younger men with new-born zeal.

This movement lifted prices at once, and quite a boom was apparent. Prices of finest Cape Cod fruit advanced in New York to \$9.50@\$10.50 per barrel, and Jersey finest standard crates to \$2.50@\$2.75, with exceptional sales a trifle higher.

This state of affairs was made possible by the very low prices that prevailed during the fall months, which encouraged larger shipments than ever before directly West, to fill the gap occasioned by the Wisconsin crop failure.

Trade in New York became comparatively dull during the last half of December, and has so remained since the holidays, and lower prices have sometimes been accepted where a sale could not otherwise be secured.

There is considerable unsold stock in New York, and probably in Philadelphia, but the stock in the hands of the growers is apparently so small that it would seem easy to sustain present prices and perhaps get a further advance later on.

A. J. RIDER,
Secretary.

STATE GRANGE OF NEW JERSEY,
PATRONS OF HUSBANDRY.

STATE GRANGE OF NEW JERSEY.

OFFICERS :

Master	RICHMAN COLES.....	Woodstown, Salem county.
Overseer.....	JOHN STATESIR.....	Colts Neck, Monmouth county.
Lecturer	MORTIMER WHITEHEAD.....	Middlebush, Somerset county.
Steward	DAVID BODINE.....	Locktown, Hunterdon county.
Ass't Steward.....	GEO. H. GAUNT.....	Paulsboro, Gloucester county.
Chaplain	CHAS. SHOEMAKER.....	Mantua, Gloucester county.
Treasurer.....	C. A. RULON.....	Swedesboro, Gloucester county.
Secretary.. ..	M. D. DICKINSON.....	Woodstown, Salem county.
Gate Keeper.....	E. E. HOLCOMBE	Mt. Airy, Hunterdon county.
Ceres.....	LYDIA D. COLES.....	Woodstown, Salem county.
Pomona.....	MAY J. WHITEHEAD..	Middlebush, Somerset county.
Flora.....	ETTIE A. JESSUP.....	Cinnaminson, Burlington county.

EXECUTIVE COMMITTEE.

R. COLES.....	Woodstown	Salem county.
JAMES H. BAIRD.....	Marlboro.	Monmouth county.
JOHN T. COX.....	Readington.....	Hunterdon county.
CHARLES COLLINS.....	Fellowship.....	Burlington county.
THOMAS BORTON.....	Mullica Hill.....	Gloucester county.

COUNTY DEPUTIES.

Burlington.....	D. T. HAINES.....	Medford.
Camden.....	AMOS EBERT.....	Ashland.
Cumberland.....	J. L. MICKLE.....	Shiloh.
Essex	R. F. HARRISON.....	Livingstone.
Gloucester.....	MATTHEW ALLEN.....	Mantua.
Hunterdon.....	JOHN T. COX.....	Locktown.
Mercer.....	GEO. W. JOHNSTON.....	Trenton.
Monmouth.....	JOHN STATESIR.....	Colts Neck.
Morris.....	A. W. CUTLER.....	Morristown.
Salem.....	ALLEN MOORE.....	Woodstown.

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES, OF THE SUBORDINATE GRANGES OF NEW JERSEY.

Number.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
2	Marl Ridge.....	William Gleason.....	Swedesboro, Gloucester county.....	Jennie L. Moore.....	Swedesboro, Gloucester county.....
5	Swedesboro.....	John B. Warrick.....	Hartford, Burlington county.....	Kate B. Lippincott.....	Hartford, Burlington county.....
8	Moorestown.....	S. B. Pancost.....	Woodstown, Salem county.....	Ellen M. Coles.....	Woodstown, Salem county.....
9	Woodstown.....	Josiah Budd.....	Thoroughfare, Gloucester county.....	George H. Gaunt.....	Paulsboro, Gloucester county.....
10	Paulsboro.....				
11	Vineland.....	E. E. Holcombe.....	Mt. Airy, Hunterdon county.....	A. W. Muirhead.....	Oak Dale, Hunterdon county.....
12	Ringoes.....	N. S. Wright.....	Burlington, Burlington county.....	Wm. S. Taylor.....	Burlington, Burlington county.....
14	Edgewood.....	D. W. Davis.....	Shiloh, Cumberland county.....	J. L. Mickle.....	Shiloh, Cumberland county.....
16	Hopewell.....	John Tyler, Jr.....	Greenwich, Cumberland county.....	Morris Goodwin.....	Greenwich, Cumberland county.....
18	Cumberland.....				
24	Union.....				
26	Harrisonville.....	Samuel Conover.....	Harrisonville, Gloucester county.....	Hannah A. Moore.....	Harrisonville, Gloucester county.....
32	Bridgeport.....	C. E. Rulon.....	Swedesboro, Gloucester county.....	D. R. Black.....	Swedesboro, Gloucester county.....
36	Medford.....	James W. Haines.....	Medford, Burlington county.....	Phebe Ann Phillips.....	Medford, Burlington county.....
37	Mount Holly.....				
38	Haddon.....	R. Lewis Shivers.....	Camden, Camden county.....	Horace M. Ebert.....	Ashland, Camden county.....
39	Mantua.....				
40	Lawrence.....				
48	Hope.....	Isaac D. Brown.....	Bridgeton, Cumberland county.....	P. L. Wheaton.....	Bridgeton, Cumberland county.....
46	Pedricktown.....				
49	Rancoas.....				
50	Pemberton.....				
51	Mullica Hill.....	J. J. Brown.....	Mullica Hill, Gloucester county.....	D. W. Sithens.....	Mullica Hill, Gloucester county.....
56	Readington.....				
57	Centre Grove.....	William Taylor.....	Millville, Cumberland county.....	Jas. T. Everingham.....	Cedarville, Cumberland county.....
58	Columbus.....	Israel Kirby.....	Georgetown, Burlington county.....	Robert Taylor.....	Columbus, Burlington county.....
60	Courses Landing.....	Warren DuBois.....	Sharptown, Salem county.....	Henry Gardiner.....	Sharptown, Salem county.....
61	Crosswicks.....	D. C. Rulon.....	Crosswicks, Burlington county.....	Elizabeth A. Rogers.....	Crosswicks, Burlington county.....
64	Pennington.....				

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES.—Continued.

NO.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
72	Ewing.....	.....	.....	.....	.....
77	Mercer.....	.....	.....	.....	.....
79	Hamilton.....	Theodore Cubberly.....	Hamilton Square, Mercer county.....	Eliza Hughes.....	Hamilton Square, Mercer county.....
81	Friesburg.....	Lewis H. Garrison.....	Alloway, Salem county.....	N. C. Perry.....	Alloway, Salem county.....
85	Williamstown.....	C. F. Tice.....	Williamstown, Gloucester county.....	Mrs. C. R. Babcock.....	Williamstown, Gloucester county.....
88	Locktown.....	G. W. Hockenbury.....	Locktown, Hunterdon county.....	I. H. Horner.....	Locktown, Hunterdon county.....
90	Blackwood.....	A. J. Driver.....	Blackwood, Camden county.....	C. C. Stevenson.....	Blackwood, Camden county.....
92	Monmouth.....	John Statesir.....	Colts Neck, Monmouth county.....	D. A. Vanderveer.....	Manalapan, Monmouth county.....
98	Allentown.....	.....	.....	.....	.....
99	Holmdel.....	Milton Smock.....	Wickatunk, Monmouth county.....	S. B. Wells.....	Bradevelt, Monmouth county.....
101	Sergeantsville.....	.....	.....	.....	.....
104	Livingston.....	.....	.....	.....	.....
105	Morris.....	A. W. Cutler.....	Morristown, Morris county.....	Theo. A. Hopping.....	Afton, Morris county.....
106	Kingwood.....	M. F. Kugler.....	Tumble, Hunterdon county.....	J. H. Stull.....	Kingwood, Hunterdon county.....
107	Caldwell.....	A. E. Hedden.....	Verona, Essex county.....	F. J. Wilson.....	Verona, Essex county.....

POMONA GRANGES.

NO.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
1	Burlington Co.....	Franklin S. Zelle.....	Columbus, Burlington county.....	Edmund Braddock.....	Medford, Burlington county.....
3	Hunterdon Co.....	.....	.....	.....	.....
4	Cumberland Co.....	.....	.....	.....	.....
5	Mercer Co.....	L. Tilton.....	Allentown, Mercer county.....	Thos. Q. Taylor.....	Hamilton Square, Mercer county.....
6	Salem Co.....	J. M. Hitchner.....	Cohansey, Cumberland county.....	R. Flicraft.....	Woodstown, Salem county.....
7	Camden Co.....	.....	.....	.....	.....
8	Gloucester Co.....	W. Sithens.....	Mullica Hill, Gloucester county.....	Thomas Borton.....	Mullica Hill, Gloucester county.....

REPORTS
OF
COUNTY BOARDS OF AGRICULTURE.

President.....	PHILIP STEIGAUF.....	Egg Harbor City.
Secretary.....	HERMANN TRISCH.....	Egg Harbor City.
Treasurer.. ..	WILLIAM BEHNS.....	Egg Harbor City.
Delegates.....	CHARLES KRAUS.....	
	HERMANN TRISCH	

LOUIS YOUNG, HENRY HAMBACHER, CHARLES KRAUS,
FREDERICK FIEDLER, JOHN C. BAAKE.

A plan was mapped out for the present year for gathering more definite and full reports from all parts of the county.

BY V. P. HOFMANN.

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answering the same. In consequence this report will not be so complete as I desired it to be.

Atlantic county is divided into ten townships, cities and towns. Of its area not over one-third is cultivated land, large districts for many miles in extent being covered with pine, low-growth oaks and dense swamps, whilst the lower portion is surrounded with salt marsh land. The soil throughout is a light sandy loam, with clay subsoil. In four townships berry and fruit growing is predominant; in the other townships a more diversified husbandry is followed. Fully eighty to ninety per cent. of the arable lands are tilled by the owners, but few hired help being needed except during the berry season.

The temperature of the past year has been unfavorable to many of our principal products; the incessant and heavy rains up to September blighted the hopes of our fruit growers, and potatoes planted in the low lands rotted in the ground. I am greatly indebted to Henry Y. Postma, Signal Service Observer at Egg Harbor City, for the following succinct meteorological report for the year 1886 :

	TEMPERATURE.			RAIN FALL.
	Mean.	Max.	Min.	
*January				
February	34.72	61.00	8.00	
March	37.84	68.00	15.00	1.20
April	52.50	89.50	32.80	4.63
May	59.80	85.00	39.50	5.02
June	66.94	89.00	39.80	2.63
July	73.06	98.50	49.80	3.95
August	70.85	92.50	48.00	5.36
September	66.97	92.80	40.80	2.15
October	55.90	82.00	20.50	2.85
November	44.75	78.80	18.00	3.37
December	30.66	38.84	23.08	3.39

*No observation this month.

Highest temperature, 98.50° July 30th.

Lowest temperature, 8.00° February 5th.

First Frost, October 17th.

Last Frost, March 18th.

Total fall of snow, 7.50 inches.

There are but two agricultural associations in this county—one known as “The Fruit Growers’ Union and Co-operative Society,” of Hammonton, see annexed report. The other is “The Egg Harbor City Agricultural Society,” numbering about eighty members, owning buildings valued at about \$3,000 and erected on lands leased from the city authorities at a nominal sum. It has been ascertained, that from its railroad station two hundred and thirty thousand one hundred and nineteen quarts of berries, six hundred and forty-three baskets of pears, seven hundred and twenty-six baskets of apples and sixteen hundred pounds of grapes were shipped during the past season. There being a largely decreased harvest in grapes the wine producers bought all the grapes that could be furnished, which accounts for the small amount shipped to market.

The leading crops grown in this county are fruits, berries, vegetables and grains. The most successful crops grown were fruits and vegetables. Among the unsuccessful crops may be classed the grape, of which only the Clävenar, Franklin and Diogenes remained free of the grape rot; the Ives Seedling was slightly attacked; all other varieties suffered under the combined attacks of mildew and rot, which made its appearance about June 20th. The grape crop on an average was only two-fifths of a crop and on the must scale the saccharine quality was on an average from ten to fifteen degrees lower than last year.

Clover-hay and green corn are in the interior the principal forage crops, and salt hay along the seashore. The condition of our public roads is good; they are generally covered with gravel, and the moneys for maintaining them are appropriated at the spring elections and expended under the supervision of road overseers.

Hog cholera has been prevalent throughout the county, but few recovering from its attacks and no general remedy or preventive has been applied to check its attacks.

The habits of the English sparrow being more closely observed, prove it to be a great pest. In the vicinity of Egg Harbor City they committed depredations upon fields of grain, and garden vegetables were not exempt from their voracious appetite.

CROP STATISTICS.

CORN.

Yield compared to last year.....	75	per cent.
Average yield per acre.....	40.45	bushels.
Price per bushel, December 1st.....	60	cents.

WHEAT.

Yield compared to last year.....	90	per cent.
Average yield per acre.....	23	bushels.

POTATOES.

Yield compared to last year.....	70	per cent.
Average yield per acre.....	110	bushels.
Price per bushel, December 1st.....	80	cents.

SWEET POTATOES.

Yield compared to last year.....	95	per cent.
Average yield per acre.....	200	bushels.
Price per bushel, December 1st.....	70	cents.

CABBAGES.

Yield compared to last year.....	100	per cent.
Price per one hundred, December 1st.....	\$4.50	

APPLES.

Yield compared to last year.....	120	per cent.
Average yield per acre.....	500	bushels.
Price per barrel, December 1st.....	\$2.00—\$3.00	

PEARS.

Yield compared to last year.....	125	per cent.
Average yield per acre.....	350	bushels.
Price per bushel, December 1st.....	\$1.50—\$2.00	

GRAPES.

Yield compared to last year.....	40	per cent.
Average yield per acre.....	1500	pounds.
Number of acres under cultivation.....	700	acres.
Average price per pound received.....	2½	cents.

STRAWBERRIES.

Yield compared to last year.....	100	per cent.
Yield per acre.....	600	quarts.
Average price per quart received.....	5	cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year.....	100	per cent.
Average yield per acre.....	400	quarts.
Average price per quart received.....	6	cents.

MISCELLANEOUS.

Yield of clover hay per acre.....	4	tons.
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REPORT OF E. R. SPROUL, OF HAMMONTON.

We are not farmers, but fruit growers, and have an organization known as "The Fruit Grower's Union and Cooperative Society," numbering two hundred and sixty members, owning a large warehouse and store and doing a business this year amounting to \$40,000.

Our leading crops were small fruits, pears and grapes. Of pears the yield was good and quality extra. Concord grapes rotted badly and were generally a failure. The yield of Ives Seedling was fair, but prices were low and the whole crop was unremunerative. The strawberry crop was good, but prices very low and the same may be said of both black and red raspberries. The blackberry is our principal crop and the yield was an average one, but prices were exceedingly low. The continuous rains so saturated the fruit that they arrived at the various markets in poor condition and sold badly from beginning to end. With the exception of pears the whole fruit business of the past year has been very discouraging.

No change of former methods of farming can be noted. Clover hay and fodder corn are our principal forage crops.

Our roads are now generally good and are being steadily improved. We cover them with about six inches of good gravel, the bottom being sandy. We vote the money necessary to maintain them at our annual town meeting the amount this year being \$2,500, which is expended under the direction of a road superintendent elected annually.

But small numbers of swine are raised here, but the business of raising poultry is increasing largely and if the present "boom" continues it will become of some consequence in the near future.

We hire a great deal of day work ; those who hire by the month board their help. There is no change in prices.

We are doing nothing about the sparrows, though they will soon be a pest.

We shipped last season one million eight hundred and sixty-five thousand and ninety-six quarts of berries, two thousand and thirty barrels pears and one hundred and three tons grapes.

REPORT OF CHARLES D. SAALMANN, OF MULLICA TOWNSHIP.

I herewith enclose my replies to the questions asked in the circular of the New Jersey State Board of Agriculture.

The leading crops of Mullica township are grapes, corn, cranberries, fruits and vegetables.

The most successful crops were grapes, cranberries, fruits and vegetables. The grape yield was about forty per cent of an average crop and amounted to one hundred and sixty-eight thousand pounds in the township, prices ranging from \$50 to \$80 per ton. The average yield of grapes was about one thousand five hundred pounds to the acre, but successful growers of grapes averaged as high as four thousand five hundred pounds per acre. Cranberry bogs yielded abundantly and averaged about sixty bushels per acre. There was an unusually large crop of strawberries, Sharpless yielding eight thousand quarts to the acre with high cultivation.

Corn and potatoes were unsuccessful, caused by the excessive rains during summer time. The yield of corn in ears was about eighteen thousand bushels, averaging forty bushels to the acre, although our best farmers produce seventy-five bushels on the acre.

The old system of farming has given way to the raising of fruit and forage crops, and the rotation of field crops. Clover, rye, timothy and fodder corn are the forage crops grown. The yield of clover per acre was immense and it seems as if this plant was especially adapted for our soil, yielding five tons to the acre.

The condition of our public roads is excellent; gravel, clay and peat are the materials used. The amount of money to be appropriated for the maintenance of our public roads is decided at the spring elections, the Township Committee supervising the work and appointing the road agents.

Eighty per cent. of our farms are farmed by their owners. Cattle, sheep, swine and poultry are raised, the poultry interest being quite extensive; two hundred and eighty-six thousand dozen eggs have been raised during the year and large quantities of poultry were sent to the Philadelphia and Atlantic City markets. Disease has rarely shown itself among farm stock.

There is a sufficiency in farm help, and the price for labor compares favorably with 1885. The farm laborers generally own their homes.

EGG HARBOR CITY AGRICULTURAL SOCIETY.

(Organized March 28rd, 1859.)

OFFICERS FOR 1886.

President	CHARLES KRAUS
Vice President.....	JOHN C. BAAKE.
Secretary	HERMANN TRISCH.
Treasurer	WILLIAM GOEHNS.
Librarian	LEWIS YOUNG.

BOARD OF TRUSTEES.

HENRY HAMBACHER, JOHN C. BAAKE, FREDERICK FIEDLER.

The Society numbers at present eighty-nine members.

The annual fair will be held at Egg Harbor City the third or fourth week in September.

EGG HARBOR CITY AGRICULTURAL SOCIETY AND CROP REPORT.

BY H. TRISCH.

Considerable interest has been manifested for the past year in the proceedings and actions of the Society, which has been shown in the increase of membership and livelier attendance at its meetings.

Our annual fair, held September 23rd to 26th, was well patronized. The exhibits exceeded those of 1885, despite a great falling off in the exhibits of grapes, as the crop of grapes was a great failure in this vicinity. The display of cattle, farm products, vegetables and pomological fruits was exceptionally fine. After

deducting all expenses of the fair, a balance of \$427.13 was left, which was employed in reducing our indebtedness. We trust that after another year's efforts this indebtedness will be entirely paid off, thereby enabling us to effectuate much needed improvements.

BURLINGTON COUNTY.

BURLINGTON COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1887.

President.....	DAVID T. HAINES.....	Medford.
Vice President.....	ROBERT TAYLOR.....	Columbus.
Secretary.....	HENRY I. BUDD.....	Mt. Holly.
Treasurer.....	ISAAC FENNIMORE.....	Mt. Holly.
Delegates to State Board.....	{ JAMES LIPPINCOTT, one year.....Mt. Holly. JOSHUA FORSYTHE, two years.....Pemberton.	

BOARD OF DIRECTORS.

HORACE LIPPINCOTT.....	Burlington County Agricultural Society.
MARK H. BUZBY.....	Mount Laurel Farmers' Club.
JOSEPH H. ROGERS.....	Medford Grange
JAMES LIPPINCOTT.....	Mount Holly Grange.
HENRY TAYLOR.....	Columbus Grange.
ALFRED SATTERTHWAITE.....	Crosswicks Grange.
JOSHUA FORSYTHE.....	Pemberton Grange.
JOSEPH LUNDY.....	Rancocas Grange.
EDMUND COOK.....	Edgewood Grange.
CHARLES COLLINS.....	Moorestown Grange.
HENRY J IRICK.....	Director-at-Large.

REPORT BY HENRY I. BUDD.

Although our County Board fails to fulfill as yet the full measure of its possibilities, it has this year succeeded in awakening some interest in the various measures that more or less control the destinies of agriculture.

There have been two meetings during the year. The first, held in August, brought us a very clear knowledge of the progress and condition of the crops in the different divisions of the county and provoked some animated discussions over the best methods of curing clover hay, the majority of testimony being in favor of the mow or cook. In new varieties of wheat, their yield, etc., Golden Russian came in for a high degree of praise.

The great growth and spread of noxious weeds, such as wild carrot, Canada thistle and plantain were greatly deplored and farmers expressed much anxiety for fear they would soon be the fullest production of acres of our best land.

At our December meeting, aside from the election of officers and directors, we discussed a very elaborate programme, composed of about one dozen different interesting subjects, to which the spare time was given, after listening to a very instructive and exhaustive address from Dr. E. M. Hunt, Secretary of the State Board of Health, on Contagious Diseases in Domestic Animals, which, on account of the adverse experience of many of our farmers during the past year, and the clear and favorable manner of its delivery, was listened to with marked attention by a Court House full of many of our best farmers and other prominent citizens.

Our program proving too long for a single session, we had to leave it for future consideration, but passed and left a rich legacy of resolutions for the consideration of Congress and your State Board.

The first was.—A resolution urging our members in Congress to earnestly advocate the passage of the Health Bill, providing for the establishment of Agricultural Experiment Stations.

Second Resolution.

WHEREAS, There have been addresses before the State Board of Agriculture, at Trenton, by Thomas H. Dudley, William Walter Phelps, A. K. McClure and others advocating a high protective tariff on importations of foreign goods into our country, and claiming thereby a great benefit to agriculture; therefore, that the farmers may have a fair understanding of this important subject, and that both sides may be heard, be it

Resolved, That the Executive Committee of the State Board of Agriculture be requested to procure either John G. Carlisle, Frank Hurd or some other equally competent speaker to address the State Board of Agriculture, at its meeting on the 26th of January, on the subject of a tariff for revenue only and its effect on the interests of farmers.

The following resolution was passed by the stockholders of the Burlington County Agricultural Society, at their last annual meeting, held Saturday, January 8th, 1887 :

Resolved, That this Society request the directors to take such action as will secure from the State Legislature an appropriation

similar to that made to the State Agricultural Society, for the purpose of stimulating agricultural and mechanical productions by exciting competition at the different agricultural fairs of the State; and we suggest that the State aid should be in the form of a grant for premiums of \$20 for each \$100 actually paid in premiums at the last annual fair of any agricultural society in the State; and that a copy of this be sent to the State Board of Agriculture, to each agricultural society in the State and to each member of the Legislature.

The following resolution has been presented by Medford Grange:

WHEREAS, The State constitution provides that property shall be assessed for taxes under general laws and by uniform rules, according to its true value;

AND WHEREAS, Property in this State is not taxed according to the above constitution, by uniform rules nor according to its "true value;"

AND WHEREAS, Such discrimination is generally against land to its detriment, and in favor of town or city and personal property; therefore,

Resolved, That in justice to the interests of land, the assessors of the several townships and the committees thereof, are instructed to examine the laws governing taxation, and when such irregularities exist on their duplicates in the valuation of property, to remove or adjust them according to the interest and spirit of the law, that justice may prevail and the law be sustained and vindicated.

RESOLUTIONS FOR INDUSTRIAL EDUCATION.

WHEREAS, The surplus revenue of the United States is already enormous, and increasing at the rate of ten millions per month;

AND WHEREAS, Statesmen and legislators are torturing their minds to learn how to dispose of and prevent its further accumulation;

AND WHEREAS, The tendency of our common school system is to fill the head and leave the hand untrained and consequently unable to make a practical application of said acquired knowledge; therefore, be it

Resolved, That this State Board of Agriculture petition and earnestly labor with our members of Congress to apply this great surplus in providing industrial training free to all children, as an adjunct or addition to the public school system of each State.

RESOLUTIONS TO IMPROVE THE PRICE OF PORK.

WHEREAS, The continued extreme low price of pork has destroyed what was once the most profitable part of our general agriculture, and believing this low price is owing to the absolute exclusion of this product from France, Germany, Austria and partly from other countries ; therefore, be it

Resolved, That our National Government be urged by this State Board of Agriculture to negotiate a reciprocity treaty with those countries, by which pork shall be admitted to their ports free of any restrictions.

With such a consummation we believe that hundreds of millions will each year be added to the profits of agriculture and the declension in the price of land arrested.

In support of this resolution, the yearly corn crop of the United States amounts to about two billions of bushels, full one-half of which is fed to pork, viz : one billion of bushels. One bushel of corn makes ten pounds of pork ; therefore, ten billions of pounds are produced, which, if freely admitted into these countries, the price would be fully increased two cents per pound, which would augment the yearly profits of agriculture about two hundred millions of dollars.

CROP REPORTS.

Not since the memorable year of 1861, when the cloud of the rebellion broke over the country, paralyzing the value of all its productions, has there been a time when the prices of almost all articles a farmer raises to sell been so generally low.

Although for several years we have been gradually approaching this era of low prices, there has until this been each year some articles that would bring remunerative rates. Now there is scarcely a product but what has reached low water mark. Last year the fortunate possessors of hay and straw would readily command \$20 per ton. This year both almost go a begging at \$10.00. Corn, although a poor crop, is ruling as low as twenty-five and fifty cents per bushel, wheat and rye a few cents below last year, and both below the average cost of production. Almost all fruits and vegetables have flooded the markets so that the prices realized have scarcely paid for handling.

Poultry and pork, both of which have in consecutive years

made many of our farmers feel rich, this year sold for almost ruinous prices.

To these statements there have been few exceptions. The large yield and fair prices of both tomatoes and sugar corn each have given about \$100 per acre.

Milk comes in the same category. The great amount of pasture enabled those managing dairies to produce cheaply large quantities of milk, which through the efforts of the Dairyman's Association was never allowed to touch a low price; by careful management they tided over the great flush without ruinous prices, enabling the market to absorb without breaking down the prices. Thus many producers are enabled to report results ranging from \$60 to \$100 per cow, allowing about two thousand quarts per cow and selling from three and a half to five and a half cents per quart, while those fattening calves received only \$25 to \$30 per cow, or one to one and a half cents per quart.

Corn has been a poor average crop. The excessive moisture of the early spring and summer months prevented its early planting, dwarfed its growth in low ground after planting, so that frost overtook it before maturing; but high ground stimulated the growth of the stalk to an unusual size, but when the ears were about setting the copious rains joined the hot suns in producing the rot and the most general scald known to our memory. Thick and dry weather later in the season prevented the development of the ear, resulting in reducing the yield of thousands of acres of ordinarily good corn land to about fifteen bushels per acre. Although to this condition there have been some notable exceptions, fifty and sixty bushels per acre where the land was well drained and corn planted over a good grass sod, yet the average for the county can not, after careful calculation, be placed over thirty bushels per acre, the smallest average known for years. We speak more fully of corn than other crops because it is our leading cereal and most useful crop.

Wheat has been an excellent yield, and although crops have been reported as high as thirty, thirty-six, forty-three, forty-eight and one-half bushels, the average has been about twenty bushels per acre. That which was housed as soon as cut was obtained in a good condition but much was injured by the persistent rains that prevailed in the middle or later harvest, causing it to grow in the shocks. Price, about ninety cents per bushel.

Rye has been a good crop. Yield about fifteen bushels ; straw about one ton per acre ; price of grain, fifty cents per bushel ; straw, \$9.00 and \$10.00 per ton—making the crop about equal in value to wheat.

The growing winter grain is far below the average appearance. All through the sowing season the weather was dry, preventing the sprouting where sown, causing many to delay seeding until so late that the ground froze before the grain shoots made their appearance above the surface. The result must be a poor yield in the next harvest.

Oats were a fine crop—yield about forty bushels per acre. The cool and moist spring and early summer stimulated and perfected their growth before the dry weather set in.

Hay was a most excellent crop. Land when well set to grass produced from two to four tons, the average about two tons per acre.

Young grass made an unusually fine catch and growth, and most of it had to be mowed to prevent fouling or smothering the grass roots.

Pasturage unusually fine, producing a great flow of milk until late in the season, when drought somewhat affected it.

Potatoes an average crop. Full ten per cent. of the early yields rotted, but the later dry weather arrested it. Price high early, low later, but good at the last of the season, ranging from forty cents to seventy cents per bushel.

Sweet potatoes an unusual yield, stimulated in their growth by the early moisture and improved in quality by the later drought.

Apples a large crop, poor quality and dropped off early and are now nearly all rotted, out of the market, scarce and high, commanding \$1.00 and more per bushel. The largest number were worked into cider. Charles Ewan, one of our largest manufacturers, who works up yearly about twenty-five thousand bushels into cider, says he finds there are a great number of new varieties which are almost tasteless, deficient in juice and spirit and are not nearly as valuable as the old varieties, either for eating or working into cider, and fall off much earlier, owing to the trees coming from more northern climates.

Peaches were a large yield but were mostly deficient in flavor and size. When of good quality sold well. The profits in three

past years being so good is stimulating the planting of a large number of trees, so our county bids fair to rival Delaware in the quantity produced, and our old time condition may again occur—when the swine consumed the largest quantities.

Grapes were a large yield but badly rotted and sold for low prices.

Pears yielded well ; sold for moderate prices, principally to the retaining houses.

Cherries a large yield but rotted badly. Much of our early fruit was thus affected by the excessive moisture.

Strawberries, raspberries, blackberries were excellent yield but sold for low prices—the market overcrowded.

Melons half crop and very poor on account of too much moisture and scalding of vines.

Tomatoes a very large yield ; sold from \$7 to \$9 per ton ; averaged a good return, \$100 per acre, where marketed at the canning houses, on account of the large quantity raised—ten to twelve tons per acre.

Poultry, a good crop, but is selling for low prices. Western competition is fast relegating this once very profitable production to the same category as wheat and corn.

Cabbage growth mostly poor on account of the wet weather and hot suns producing scald and loose heads ; prices so low as to be unremunerative.

Boiling corn has been a profitable crop, yielding in many instance \$100.00 per acre.

Pork about three-quarters of a crop. The low price has dampened the ardor of many of our former large producers ; price four and half to five and half cents per pound.

Milk has been our best production both in quantity and price. The quantity has been full fifty per cent. above the average, and not much difference in the price.

Sheep and early lambs, an industry not much fostered, has proven very profitable, one member reporting that fifty ewes with early lambs have made a profit of \$12 each, and fifty more one-half that sum.

Cranberries were a good yield and have been steadily advancing in price from \$1.25 to \$2.50 and \$3.00 per crate. Last year they, although a large crop, realized no profit, in many cases

found no market, an illustration of the extremes to which any crop is subject.

SILOS.—The interest in silos is gradually on the increase. The projectors of new ones express the highest satisfaction with the use of ensilage. The Lorillard farm, possessing the largest one in the country, annually fattens about two hundred head of cattle with its contents, the ensilage being the leading food, with the admixture of hay, stalks and grain. The meat produced is of the best kind and presents a fine appearance as it hangs in our markets and is said to be very juicy and toothsome. On account of the great quantity and extreme cheapness of all kinds of fodder this year the economy of the silo is not so apparent, but when hay sells for \$20 per ton it is worth almost a bank to the farmer, as it enables him to market the most of his hay.

CARP CULTURE.

There is considerable interest manifested in carp culture, and the advocates of it claim there will be much profit in it besides furnishing a plentiful supply of an edible fish.

As far as my knowledge extends, there are now twelve persons in our county engaged in the culture, viz :

Hon. Wm. Parry, Parry P. O., 2 ponds, 2 acres.
Joseph Haines, Lumberton, 1 pond, 2 acres.
James Middleton, Hainesport, $\frac{1}{4}$ acre.
Harry Culin, 2 ponds, 1 acre.
Dr. W. C. Parry, 1 pond, $\frac{1}{2}$ acre.
Charles Johnson, Lumberton, $\frac{1}{2}$ acre.
Frederick Danty, Mt. Holly, 2 ponds, 2 acres.
P. Lorillard, Jobestown, 2 ponds, 3 acres.
Joshua Hollingshead, Hartford, $1\frac{1}{4}$ acres.
Samuel Lippincott, Hartford, 2 acres.
Joseph Hinchman, Medford, 2 ponds, 4 acres.

These ponds cover an area each of from a half to four acres ; some are in one pond some are divided into two and three ponds for the different sizes and ages of the fish.

Joseph Haines, at Lumberton, started a pond five years ago, by overflowing a meadow of two acres completely covered with hassocks. Over this he raised the water from six inches to six feet in depth and placed in it seventeen carp one and one-half inches long. At the end of two years there were but six of these

left in the pond, the remaining portion passing out of existence from some unknown cause. From these were hatched just five hundred and the old ones had grown to the size of two feet long and weighed from ten to twelve pounds each. With this five hundred he stocked several ponds in the neighborhood—now eating fish hatched three years ago, that are two feet long and weigh from six to seven pounds.

He thinks his pond furnishes a natural feeding ground for the fish as he does not feed them except experimentally to see what they will eat. Has thrown them sheaves of rye, cabbage, clover, turkeys and calves killed by railroad, which passes alongside of the pond, and occasionally runs over his animals. Amid has-socks and grass he thinks they would thrive without other food.

He believes the quality of the fish is only inferior to shad, but this depends somewhat upon the character of the water and feed. One of the largest ponds in the county is filled with water from an artesian well, the water of which being tinged with sulphur has given the fish an unpleasant taste. He says they are as solid as rock fish and more palatable than the average fish caught in the sea and retailed through our section. Are good to boil but better to fry.

Mr Haines is in the habit of inviting parties to test their qualities and gratuitously distributes them among his friends in order that their testimony may establish the character of the fish as one of the valuable food products of the country. Judge William Parry, of Parry, contributes an interesting and instructive paper on this subject which follows this and will no doubt be perused by many with benefit.

CARP CULTURE.

BY HON. WILLIAM PARRY.

The cultivation of carp in the county of Burlington is of recent introduction. In the fall of 1881 we obtained sixty-three young carp about the size of steel pens from S. F. Baird, United States Fish Commissioner, Washington, D. C., and placed them in one of the ponds we had previously constructed, on the most approved plan, recommended by the best experienced carp culturists. There should be at least three or four ponds to carry on

the business in a satisfactory and profitable manner, so as to keep those of an equal size and age together. Our ponds are all located on the same ravine which empties into the north branch of Pensaukin creek a little above the Forks. The smallest one (about one-third of an acre) is near the upper end of the ravine and used for breeders to spawn in. There is eighteen inches fall from first to second pond and the same from second to third pond. The stream of water is very small and the bottom had been used for mowing coarse natural grass before the three dams were thrown across; the over-flow from the first pond supplies the second and the same water overflowing the second bank supplies the third pond. The overflows are perhaps the most important feature in the proper construction of the ponds, and may sometimes be the cause of failure or success. As the carp will grow and multiply much faster in warm than in cool water, the overflow, to discharge surplus water, should be so constructed as to draw cool water from the bottom of the pond, leaving the warm surface water for the young carp to luxuriate and thrive in. The bottom of the ponds are graded so as to give a regular descent from all parts to the collector (a triangular box with board bottom and sides about one foot high) into which all the fish in the pond of every description must slide, whenever the pond is drawn down, which should be done twice a year so that the proprietor can have entire control for selecting, assorting and arranging them as thought proper. The three ponds above stated are not all of a size; No. 1 being one-third of an acre is sufficient for breeding purposes. No. 2 is double that size, containing two-thirds of an acre, in which the stock fish may be kept until they are two years or more old. No. 3 is larger, containing one and a half acres, in which the carp are kept from the time they are taken from No. 2 until wanted for some other purpose, either to sell for breeders to stock other ponds, or for table use at home or to fatten up for market, where we have found a good demand for them at from fifteen to twenty cents per pound. The manner of fattening them for market or table use has much to do with the quality of the flesh when cooked for eating. The habit of carp is to forage along the muddy bottom of the pond, feeding on animalculæ and larvæ and insects around the roots of water lilies and aquatic

grasses found growing there in abundance, both useful and ornamental. If carp should be taken from these muddy quarters, smothered to death in an element they cannot breath, as is sometimes done before being prepared for the table, the flavor of the flesh will not be so good as when put in a clean pen with board bottom and sides, supplied with pure spring water, and furnished with plenty of good food, soft corn, small potatoes boiled, grain and seeds of any kind that poultry and swine would fatten on, for two weeks before they are fit to be dressed for the table. We have constructed such a pen twenty by twenty-four feet and four feet deep in front of a lively spring flowing from the side bank in pond No. 3, which is very convenient for various purposes, such as fattening or storing for future use, always handy to get them either for market or home use, or show to visitors if desired. Sometimes in the fall of the year, when the ponds are drawn off, the weather is so dry that it requires a long time for the water to fill up again sufficiently for the carp, during all which time they are amply provided for in the artificial reservoir; before the approach of winter the ponds gradually fill up, when the carp are scooped out of their pen, assorted and each size placed in the proper pond, leaving a sufficient quantity for home use and sale which can be lifted out as wanted. We found it expedient to cover the tank with woven wire to keep out fish hawks, cranes and other bipeds that might be drawn there by curiosity during our absence and annoy the occupants therein. We placed between two thousand and three thousand carp in the tank at the time of drawing the ponds last fall, which have been very convenient of access ever since and appear to do as well as in the ponds.

Carp culture is very interesting and profitable where the location is favorable to the construction of ponds without too much cost. The question may be asked, is there nothing to be said on the other side? To which we reply, yes, an abundance. The enemies of carp culture are too numerous to mention and many of them are working industriously while the owner is asleep. Musk rats if let alone will soon work through an elegant bank that has been nicely sodded with green grass. Fish hawks will hover over the water and with watchful eyes determine the location of, and dropping like a shot seize a carp and carry it off to

feed on. Pike are very destructive if allowed to be with carp; they and all other fish must be removed at the semi-annual drawings of the ponds, spring and fall. And sometimes when every precaution has been taken and a fine crop of carp reared, men who disregard the law will capture them. On the 25th of June, 1883, several men from Philadelphia came in a small boat and rowed up the creek to opposite our ponds, and with a net which they had stolen from a neighbor dragged the ponds, doing great damage to the young carp and spawn, throwing them on the ground where the net was emptied and taking the large fish with them, selling eight near the Sorrel Horse Hotel, which helped to convict them when caught in Philadelphia and taken to Mount Holly and sentenced at the September term to confinement at hard labor in the State prison—one for one year and another for eighteen months. So it seems that all is uncertain here, and well has the poet said.

“ For care and trouble set your thought ”
E'en when your end's attained,
For all your views may come to naught
When every nerve is strained.

Respectfully,

WM. PARRY, Parry, N. J.

EXTRAORDINARY YIELDS.

Edmund Cook, Burlington township, records an extraordinary yield of Alsike and red clover. Each swath was a winrow and did not need raking. Ten acres produced forty big loads of good hay. Had to keep one man to rake off, after the machine, and away from the next cutting. Alsike bettered the crops by at least \$50.

Asa Roberts, near Moorestown, reports some special experiments on potatoes.

On a good loam soil spread \$35 worth of manure, broadcast. The yield was two baskets potatoes per row. On another patch he broadcasted \$35 worth of fertilizers; yield four baskets per row. For another fertilizer in row, five baskets per row. Manure broadcast and fertilizer in row, four and a half baskets per row.

Two men in our county, who are too modest to have their names mentioned, have each raised and sold over \$10,000 worth

of cranberries and the most of them were sold at the lower prices of the season. These results, with numerous others comparatively as good, show the possibility of our pine lands when cultivated with special crops.

J. J. Allen's Sons having offered premiums for the best fields of wheat raised by their fertilizers, to be awarded by the Burlington County Agricultural Society, the following was the result :

First premium of \$50 to Clement Burrough for the best five acres of wheat, forty-seven and three-quarters bushels per acre, \$50. Second to Wm. L. Hale, thirty-six bushels per acre, \$25.00.

Judson C. Gaskill, Birmingham, New Jersey, having offered premiums for best crops raised on not less than four acres by his fertilizer, to be awarded by the Burlington County Agricultural Society, the following was the result :

Wm. B. Lippincott, Hartford, best field of wheat, forty bushels per acre—\$35.00.

John B. Deacon, Columbus, second best, thirty-eight and one half bushels per acre—\$25.00.

Job W. Clevenger, Pemberton, thirty-five bushels per acre, third best—\$15.00.

Samuel S. Clevenger, Westhampton, fourth best—\$10.00.

The Burlington County Agricultural Society awarded the following premiums for field crops :

Best six acres of wheat, \$10.00, to Granville Leeds ; yield three hundred and twenty-three bushels for eight acres—forty-three bushels per acre. Second best, R. C. Ballinger, thirty-six bushels per acre.

Best six acres of corn, \$10.00, to Charles King—ninety-eight bushels per acre. Second best, \$5.00, to Edward E. Logan.

Granville W. Leeds presented a field that averaged ninety-three and one half bushels per acre.

For the best six acres of rye, \$5.00, to R. C. Ballinger.

For the best acre of potatoes, \$5.00, to G. W. Leeds—four hundred and sixty-six baskets per acre ; for the second best, \$3.00, to Jacob W. Gaskill.

For the best acre of sweet potatoes, \$5.00, to Howard Russ—four hundred and fifty-nine baskets ; for the second best, \$3.00, to J. E. Stevenson—three hundred and fifty baskets.

For the best half acre of turnips, \$3.00, to D. Budd Coles ; for the second best, \$2.00, to Thomas Fish.

For the best half acre of Mangel Wurzel, \$5.00, to J. E. Stevenson.

For the best half acre of carrots, \$5.00, to J. E. Stevenson.

For the best half acre of cranberries, \$5.00, to James Adams ; for the second best, \$3.00, to J. E. O. Ballinger.

For the best acre of boiling corn, \$5.00, to John Croshaw.

For the best acre of tomatoes, \$5.00, to Jos. C. Haines—fifteen and one-quarter tons per acre ; for the second best, \$3.00, to Henry D. Culin—thirteen and one-half tons per acre.

The committee regret there were not more premiums for corn as the crops were so near alike and so many offered they had great difficulty in deciding.

Granville W. Leeds raised crops of Early Rose, three hundred and fifty bushels per acre ; Belle, four hundred and fifty bushels per acre ; White Star, six hundred bushels per acre.

REPORT OF TEMPERATURE AND RAINFALL AT RAN-COCAS FOR 1886.

BY SPENCER HAINES.

The following is the summary of weather for 1886 : There were two hundred and eight cloudy days, on twenty-seven of which the sun did not appear. Storm fell on one hundred and sixty-seven days, to wit : One hundred and twenty-two rain, twenty-five snow, eight rain and hail, seven rain and snow, three rain, hail and snow, two snow and hail. Depth of rain, forty-one thirteen-sixteenths inches. Depth of snow, forty-two inches. Average rain fall for ten years, forty-two one-tenth inches. Average snow fall for ten years, thirty-one one-tenth inches. Mean temperature, A. M. and P. M., forty-nine degrees mean ; for ten years, forty-eight nine-tenths. The highest mean in ten years was fifty and one-half in 1878 and 1881. Lowest mean forty-seven and one-half in 1879 and 1885. The greatest precipitation of rain during the ten years past was fifty-one one-sixteenth inches in 1877. Least precipitation, thirty-seven one-sixteenth in 1885. Largest precipitation of snow, fifty-six inches in 1880 ; and least precipitation, eleven one-eighth in 1877. The highest temperature was ninety-two on Seventh month 4th, 7th and 30th. Lowest temperature four below zero, First month 13th. Highest temperature for ten years, one hundred and two, Ninth month 7th, 1881. Lowest temperature, fifteen below zero, First month 1st, 1881.

BURLINGTON COUNTY.

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THOMAS J. BEAN'S REPORT OF TEMPERATURE AND RAIN FALL FOR 1886,
MOORESTOWN, BURLINGTON COUNTY, N. J.

	TEMPERATURE.			Rain and melted Snow.	Snow.
	Max.	Min.	Mean.		
January.....	35°	8°	25.86°	4.665 in.	18. in.
February.....	64°	4°	27.58°	6.025 "	14.25 "
March.....	64°	12°	37.51°	3.54 "	Trace.
April.....	88.5°	28.5°	50.92°	3.165 "	2.25 "
May.....	88.5°	45.5°	58.52°	6.805 "	.....
June.....	88°	44°	66.28°	3.18 "	.....
July.....	92°	60°	71.99°	5.17 "	.....
August.....	93°	52°	70.18°	2.44 "	.....
September.....	92°	42°	66.19°	1.02 "	.....
October.....	81°	22°	54.04°	2.47 "	.....
November.....	78°	22°	43.08°	4.21 "	.....
December.....	58°	8°	28.81°	4.01 "	15. "
For year...			50.08°	46.7 in.	44.5 in.

Last frost in spring (killing) April 9th ; temperature, 28.5°.

First frosts in autumn, on 2nd, 3rd and 4th of October heavy white frosts ; did not entirely destroy tomato vines, &c. That of the 17th, with temperature 22°, closed the season for out of door growth of tender vegetation, making that season of one hundred and ninety-one days duration.

The rain-fall for year, three and six-tenths inches above average, was heaviest in first part of year, affecting injuriously the starting of the corn crop in many fields, and giving the county the best catch of clover that it has been favored with for many years.

The rot that set in and destroyed a part of the heavy potato crop was arrested by drier period, leaving balance of crop uninjured in quality.

The dry September gave high quality to heavy sweet potato crop.

Pasture was good throughout season, and not once were our fields browned by drought.

We beg to acknowledge the courtesy of the following gentlemen, who have manifested sufficient interest in agriculture to furnish me material for crop report, viz :

George Wilds, New Hanover township.
Joel Wainwright, Jacobstown, N. J.
David T. Haines, Medford Grange.
Isaac Nicholson, Medford Grange.
William R. Wills, Rancocas, N. J.
Thomas J. Beans, Moorestown, N. J.
Robert Taylor, Columbus, N. J.
Alexander Thompson, Rancocas.
S. C. DeCou, Moorestown.
Hon. William H. Doran, Vincentown.
Alfred Budd, Buddtown.
Horace B. Lippincott, Jobestown.
Crosswicks Grange.
Charles H. Vansciver, Beverly.
Hon. William Parry, Parry P. O.
Joseph Haines.

The following is a condensed reply to the questions formulated and sent out by your secretary and executive committee:

First question. "Have the farmers any organization, and what is their numerical strength?"

Burlington county contains twenty-seven townships. In these are thirteen farmers' organizations, containing about fourteen hundred members, viz:

First. The Burlington County Agricultural Society, with a membership of four hundred. Their meetings and annual fairs are held at Mount Holly.

Second. The Moorestown Agricultural and Industrial Society, with a membership of three hundred and twenty-one. Meetings and fair held at Moorestown.

Third. The Moorestown Grange, whose membership numbers one hundred and nine. Its meetings are held weekly at Moorestown.

Fourth. Medford Grange, with a membership of fifty-nine. Weekly meetings at Medford.

Fifth. Mount Holly Grange, with a membership of twenty-five. Monthly meetings at Mount Holly.

Sixth. Columbus Grange, with a membership of about seventy. Weekly meetings at Columbus.

The Burlington County Pomona Grange, composed of members from all the other granges in the county, holds its regular meetings at Mount Holly four times each year. It has a membership of about five hundred, and is in a very flourishing condition.

Seventh. Pemberton Grange, with a membership of thirty. Weekly meetings at Pemberton.

Eighth. Crosswicks Grange, with a membership of thirty. Weekly meetings at Crosswicks.

Ninth. Rancocas Grange, with a membership of fifteen. Meetings at Crosswicks.

Tenth. Edgewood Grange, with a membership of twenty. Meetings at Burlington.

Eleventh. Mt. Laurel Farmer's Club; has a nominal membership of one hundred and ten. Monthly meetings at Mt. Laurel.

Twelfth. The Burlington County Dairyman's Protective Association. It numbers one hundred and thirty members, and holds its meetings monthly at Mt. Holly.

Second Question. What were the leading crops in your county?

The leading crops in New Hanover, Bordentown, Chesterfield, Mansfield, Springfield, Burlington, Westhampton, Easthampton, Lumberton, Pemberton, Southampton, Shamong, Medford, Evesham, and part of Chester townships were corn, hay, wheat, rye, oats, potatoes, poultry, milk, pork, fatted calves and apples, each producing a limited portion of vegetables and small fruits.

Beverly, Cinnaminson, Delran, Parry, Willingboro and parts of Chester and Burlington are mainly devoted to trucking, viz: To the raising of peas, tomatoes, citrons, melons, sweet-corn, early potatoes, cabbages, strawberries, blackberries, apples, peaches, grapes, cherries, sweet potatoes, asparagus, pickles and turnips.

Little Egg Harbor, Bass River, Washington, Randolph and portions of Medford, Southampton and Pemberton, being sandy and swampy districts, are noted only for their timber, cranberries, whortleberries and pleasure and health resorts.

Third question. What crops were the most successful?

In the grain and grass districts, wheat, rye, hay, grass and potatoes.

Fourth question. What crops were unsuccessful?

Ans. Corn—too wet, early and scalded, too dry later; cabbage on account of wet and worms; melons on account of scald; turnips, too dry fall.

Fifth Question. What improvements have been made in the manner of farming, gathering and marketing of crops ?

Answer. Many new improvements in farming implements—binder to gather, more commercial fertilizers are used, more crops sent to market by boat when formerly sent by wagons ; sowing of Alsike clover.

Sixth Question. What forage crops were grown ?

Answer. Corn fodder, Alsike clover, orchard grass and hay, millet, Hungarian grass, ensilage.

Seventh Question. What is the condition of the public roads, what material are they principally made of and what is your system of maintaining them ?

Answer. The condition of the main lines of travel in the river townships is generally good, having been machined to the centre and gravelled, and some of them graded and piked. The side roads are generally sandy. In the pine townships the roads are mostly sandy. In the middle townships, between the river and pine, one-half of the roads are reasonably good, the balance poor ; there is a strong tendency to improve them by machinery, claying and gravelling, which is much retarded by the inhabitants being unwilling to submit to taxation, the taxes for other purposes being burdensome. Many of the townships appropriate from \$500 to \$1,200 each year for scraping, gravelling and claying alternate sections. This in some districts has been supplemented by the farmers working gratuitously, carting gravel until a section is gravelled, repeating this each year until the main roads are completed. The greatest drawback to such improvements is the entire absence of suitable gravel from many portions of the county. Where this can be obtained by short hauls the roads present almost a turnpike appearance. Gravel is now largely brought by rail from more favored sections. A Telford road, Camden to Westfield, in our county, has been completed during the past summer at a cost of \$10,000 per mile, which may be a forerunner of more substantial and permanent road improvement.

Eighth Question. What per cent. of your farms are farmed by the owners, and what per cent rented.

Answer. The county averages about seventy per cent. farmed by the owners ; about thirty per cent rented, ten reports giving

this average, one reporting twenty-five, one thirty, one fifty, and one ten per cent. as rented.

Ninth Question. Are horses, cattle, sheep, swine or poultry raised? Have they suffered from any form of disease; if so what and what remedies were applied?

Answer. Our farmers as a rule do not make a business of raising horses, cattle and sheep—not as much as they should and not as much as they will be found to in the future if they wish to secure profitable animals, and those free from the diseases they are so apt to catch in transit through the stock yards and infected cars. Promising colts, calves and lambs are often raised. Some buy the choice of the New York calves, thousands of which are distributed among our farmers for fattening and raising, and many dairies are now principally made up of these selections grown to maturity. Horses, cattle and sheep are generally brought from the Northern and Western States and many from Western Virginia. Swine and poultry are all raised by farmers except when thoroughbred males of improved breeds are introduced to improve the stock.

We have two horse breeding farms in our county—P. Lorillard and Feoring farms. The thoroughbred animals of the first have created by their performances a world wide renown. A number of farmers have small studs.

There are several engaged in breeding Jersey cattle. A few are becoming interested in Holsteins and Dutch belted cattle, one in Swiss, one in Devon, one in Durhams.

Several are engaged in raising Jersey bred Magee and Chester swine to sell for breeders. One in Southdown sheep.

Pleuro-pneumonia has prevailed to a considerable extent in New Hanover, Southampton and Shamong townships, propagated by a herd of seventy-six New York stock yard calves being introduced during the late summer into different herds. About three hundred cattle were exposed; about thirty cows and fifteen calves died and were destroyed by the State Board of Health. All of the exposed cattle were quarantined and most of them inoculated; of these, four calves, six cows and one bull died, most of them by neglect after inoculation; on two farms quite a number lost their tails.

The carelessness of some of our dealers and farmers is almost

criminal in not exercising proper judgment in their purchases. They should be required to quarantine all their purchases from stock yards and droves for a reasonable time and urged to avoid stock yards and buy in remote portions of this and other States away from through lines of railway, where the disease has never appeared.

A singular disease has attacked the teats of the cows of one of my tenant farmers and also one of his neighbors. The result has been the loss of the bag and teats of nine or ten cows. The cause so far is inexplicable. Veterinarians who have diagnosed it have failed to characterize it. The disease commences by a scab forming on the end of the teat, followed by others on the other side; these scabs fall off and a mass of corruption is emitted.

Pressure on the teats is so painful to the cow that she refuses to give down her milk, consequently the bags wells and gathers, in many cases loses its functions. Since November five out of a herd of twenty-two cows have been affected. By constant care and the application of remedies internally and externally the bags of these five cows have been preserved but not cured. The milk does not seemingly affect the calves who suck these cows, but the same given to a fine lot of cats has destroyed them all but one by scouring them to death. The cows eat well and show no other signs of ill health. We asked Dr. Hunt for the cause and remedy.

Poultry has suffered less than usual from disease. There has been an increasing trouble from gapes in the spring caused by worms in the wind pipe suffocating or choking the small chickens to death. The usual plan of removing the worms by horse hair or feather is often very successful but is attended with a great deal of trouble and requires more than the average skill.

A new preventive discovery is announced. The idea is advanced that the disease is due to the obstruction of the air passages by little parasitic worms known as Syngamin, which collect in masses from the lower part of the trachea to its middle. Dr. H. D. Walker, of Franklinville, New York, claims to have discovered the original host of this worm. Their life history is as follows:

Earth worms containing the embryos of the gape worms are eaten by the fowl. The embryos are liberated from the in-

testines of the earth worm and work their way through the œsophagus into the lungs and bronchial tubes. During this act of passage, or while in the lungs, they pass through the nympha stage and acquire sexual maturity. The male and female then unite and attach themselves by their sucker-like mouths to the mucous membrane of the trachea. In about seven days more the eggs within the body of the worm become mature. They are coughed up into the mouth swallowed by the fowl and pass through it into the soil.

In about three weeks, these eggs, exposed to the sun and moisture, hatch, the embryos are taken in their food by the earth worm, where they remain until picked up by some bird, when the above mentioned process is repeated. Dr. Walker has proved by eight successful experiments in feeding them to chicks that the earth worm is the original host of the gape-worm. That the earth worm is only a bearer or means of conveying the embryo to the fowl was proved by feeding the embryo hatched from the eggs to a chick and thus producing the gapes. The only remedy found effective was the destruction of the infected earth worms in the ground by the application of common salt. Our excuse for this lengthy quotation is the destruction of one-half to two-thirds of the young fowls in certain localities by this disease. The prevention of the fowl from eating the infected earth worm not only removes this terrible scourge of poultry but unlocks the mystery to several other diseases caused by parasites belonging to this family, viz: the lung worm of calves, of sheep and grouse, great numbers of which are yearly destroyed by these parasites. Their original host being well settled to be the earth worm the remedy seems plain if it can be made effectual, viz: the cure of infected pastures by the application of salt, or something that will dissolve the host.

Hog cholera, almost an epidemic in several townships in 1885, has in 1886 failed to put in an appearance, but if it had it would have found but a limited field to work in, as on account of the disease in 1885 and continued low price of pork the farmers had largely lost and reduced the numbers of their swine.

There seems to have been found no certain remedies for this disease. It comes and goes at its own sweet will.

Tenth Question. Is there a sufficiency of farm help? How does the price for labor compare with 1885? Do employers generally board their help?

Answer. Except in the neighborhood of the manufacturing towns and in the summer harvest time there is a sufficiency of farm help, but it is much less skilled than formerly, the best of it seeking more easy and remunerative employment in factories and rapidly growing near-by cities.

The price is about the same as in 1885, but twenty-five per cent. higher than in 1860, the year before the war, ranging all the way from \$15 to \$20 per month and board.

Employers generally board the help, but the tendency is the other way, especially where farmers have near-by tenant houses. Although it is more convenient and profitable for each farmer to board his men, on account of having them more readily in hand to direct and lead, yet they are from necessity compelled on account of the scarcity of female service to liberate their wives from the slavery of providing public lodging and boarding for the farmers' assistants.

Improved machinery, binders and hay carriers at harvest time, wheel corn and potato planters and tenders have in a measure supplemented the scarcity and unskilled condition of help.

Eleventh Question. Has there been any effort made to enforce the law in regard to the English sparrow?

Answer. There has been no effort to enforce the law. Yet no one wishes to protect them. They destroy much grain, many patches of wheat presenting the appearance of being threshed with hail, many fruits and vegetables, and the opinion is strongly expressed that if they continue to increase in the future as in the past it will soon be impossible for them to procure sustenance without destroying many of our crops.

Twelfth Question. Are there any subjects that the agriculturists or horticulturists of your county would like to have discussed at our next annual meeting?

Answer. The following were offered:

How shall we get lower freights from the railroads which are discriminating against New Jersey and in favor of the South and West?

How to make farming more profitable?

How to keep ice ?

How to preserve fruit ?

Diseases of domestic animals, poultry, cattle and hogs.

Tariff for revenue only.

What is the fair average yield of crops ?

MOORESTOWN GRANGE.

HARTFORD, N. J., January 25th, 1887.

To Henry I. Budd, Secretary of the County Board of Agriculture :

Moorestown Grange is in a prosperous condition, numbering at present one hundred and five members. We have built this past year a new brick hall, with store room underneath, the dimensions of which are thirty and fifty-six feet.

Our purchases the past year, through the medium of our League, aggregate \$9,960.59, including groceries, dry goods, clover and timothy seed, seed potatoes, fertilizing materials, feed and coal.

The committee appointed to visit the farmers of our members report having visited forty-six farms, consisting of :

Cleared acres of land	4,590
Acres of woodland.....	231
Acres of meadow	458
Total.....	5,269
Average number of acres in each farm.....	114½
Acres in apple orchard (medium crop).....	166
Acres in pears, (poor crop).....	27½
Acres in peach trees.....	24
Acres in cherries, (not very profitable).....	2
Acres in strawberries, (good crop, but low prices).....	38
Acres in currants.....	4½
Acres in blackberries, (did not pay to market them).....	15
Acres in grapes, (mostly Niagaras).....	11½
Acres in corn, (yielding fifty-five bushels per acre).....	685
Acres in wheat, (yielding from twenty to forty-one bushels per acre)...	541½
Acres in grass, (yielding one and fifteen-sixteenths tons per acre).....	1,418
Acres in oats, (yielding fifty-five bushels per acre)	78
Acres in rye, (yielding twenty bushels per acre).....	58
Acres in white potatoes, (yielding one hundred and thirty-five bushels per acre).....	234½

Acres in sweet potatoes, (yielding one hundred and eighty-six bushels per acre).....	48
Acres in citron, (realizing \$75 per acre).....	45½
Acres in tomatoes, (realizing from \$80 to \$185 per acre).....	59
Acres in cabbage, (realizing \$75 per acre).....	79½
Acres in sugar corn, (\$65 per acre).....	88
Acres in watermelons, (good crop)	6
Acres in egg plants, (realizing \$202.95 per acre).....	1
Acres in pumpkins, (for stock)	2½
Acres in peppers, (realizing \$100 per acre).....	2½
Cows, head of.....	511
Those retailing milk averaging \$155 per head.	
Those wholesaling milk averaging \$77 per head.	
Those making butter for customers, \$50 to \$80 per head.	
Those fattening calves for customers, \$38 per head.	
Horses, mules and colts.	262
Hogs.	265
Sheep.....	261

Fraternally,

KATE B. LIPPINCOTT,

Secretary.

REPORT OF CROSSWICKS GRANGE.

The committee appointed by Crosswicks Grange, No. 61, to visit the farms of members of the Grange, make following report :

We find the number of acres owned by members of said Grange to be two thousand and ninety-six, divided into eighteen farms and devoted to the cultivation of the following crops yearly : corn, three hundred acres ; oats, ninety ; wheat, one hundred and forty-seven ; potatoes, forty-eight ; mowing grounds, two hundred and seventy-eight ; pasture, three hundred and thirty-eight ; orchards, truck and small fruits, one hundred and eight ; woodland waste, one hundred and eleven ; roads, yards and grounds, forty-three ; rye, one hundred and eighty-five. Yielding per acre as follows : corn, forty-seven and one-quarter bushels ; oats, forty-five bushels ; wheat, twenty bushels ; rye, fifteen bushels ; hay, one and three-quarters tons per acre.

Small fruits and truck producing will only pay when properly cultivated, not sufficient attention being paid to orchard culture to make it remunerative.

The stock kept on said farms about as follows : horses, fifty-one ; mules, fifteen ; colts, sixteen ; cows, two hundred and eight ; fat cattle, three ; young stock, twenty-three ; sheep, one hundred ; hogs, one hundred and five ; pigs, two hundred and seventy-three.

Considerable attention is given to the raising of poultry in this vicinity and the industry is believed to be one of the most profitable when judiciously and carefully managed.

The dairy products are disposed of according to the situation of the producer ; those living convenient to railroad stations ship to the city ; those near creameries sell to them ; others make butter or fatten calves as most convenient. That sent to the city pays best ; that sold to the creameries, made into butter, or fed to calves, each having its advocates, falls below in profits.

It is believed by your committee that some farms in our neighborhood show increased productiveness, while many others are depreciating on account of depressed condition of agriculture, having to sell many of our crops at less than cost of production, hence the lack of means for the improvement of the soil.

EXPERIMENTS.

Joseph Hendrickson sowed cow peas for fertilizers, sowing one bushel per acre about June 1st, plowed them under first part of September, and sowed to rye, increasing the crop of grain from sixty to seventy-five per cent. on light sandy soil.

Henry E. Satterthwait sowed cow peas as a fodder crop ; they grew very well, affording a great deal of pasture. The cattle ate them greedily and gained in condition rapidly, looking slick and fine.

Samuel F. Woolley, with potatoes, used Moorestown phosphate,

Using 1,000 pounds per acre ; yield.....	215 bushels.	
Using 1,500 pounds per acre ; yield.....	217 bushels	
Esmeralda Guano, 1,000 pounds per acre ; yield.....	209 bushels.	\$22 50.
Nothing	132 bushels.	

All on corn stubble treatment the same.

An experiment with grass, using

Nitrate soda, 100 pounds, increase.....	100 per cent.
\$85.00 phosphate, 400 pounds, increase.	25 per cent.
Nitrate 100, phosphate 400, increase.....	125 per cent.

STATE BOARD OF AGRICULTURE.

Nitrate 100, phosphate 400, muriate 100.....	225 per cent.
20 loads of stable manure below 1st.....	70 per cent.
20 loads of stable manure, early spring.....	20 per cent.

The above were upon a three years old timothy sod.

All of which is respectfully submitted.

SAM'L F. WOOLLEY,
Chairman of Committee.

BURLINGTON COUNTY AGRICULTURAL SOCIETY.

OFFICERS AND DIRECTORS FOR 1887.

President	ISAAC FENIMORE.....	Mt. Holly.
Vice-President	WILLIAM S. TAYLOR.....	Burlington.
Recording Secretary.....	JOHN B. COLLINS.....	Mt. Holly.
Corresponding Secretary.....	HENRY I. BUDD.....	Mt. Holly.
Treasurer	EDWARD B. JONES.....	Mt. Holly.

BOARD OF DIRECTORS.

ISAAC FENIMORE.....	Mt. Holly.
WILLIAM S. TAYLOR.....	Burlington.
HENRY I. BUDD.....	Mt. Holly.
BENJAMIN F. DEACON.....	Mt. Holly.
JOSEPH WILLS.....	Rancocas.
JOHN B. COLLINS.....	Mt. Holly.
HENRY ELLIS.....	Juliestown.
SAMUEL H. CHAMBERS.....	Mt. Holly.
WILLIAM R. LIPPINCOTT.....	Cinnaminson.
WILLIAM C. PARRY.....	Mt. Holly.
JUDSON C. GASKILL.....	Birmingham.

FINANCE COMMITTEE.

JAMES LIPPINCOTT.....	Mt. Holly.
JAMES W. DEACON.....	Mt. Holly.
ROBERT B. ENGLE.....	Mt. Holly.

EXECUTIVE COMMITTEE.

BENJAMIN F. DEACON.....	Mt. Holly.
HENRY I. BUDD.....	Mt. Holly.
JOHN B. COLLINS.....	Mt. Holly.
JOSEPH WILLS.....	Rancocas.
SAMUEL H. CHAMBERS.....	Mt. Holly.

ANNUAL FAIR, OCTOBER 10TH TO 15TH, 1886.—SIX DAYS.

TREASURER'S REPORT.

*To the Stockholders of the Burlington County Agricultural Society
for the year ending January 8th, 1887.*

RECEIPTS.

Balance on hand at last report	\$1,016 43
Admission to the grounds.....	\$19,788 00
Admission to Exhibitors.....	194 00
Admission to Grand Stand.....	2,881 75—22,808 75
Crossing the Ring.....	228 00
Rents for Refreshment Stands.....	2,760 00
Amusements.....	1,565 24
Privileges.....	298 00
Coat and Package Room.....	88 15
Rent of Grounds for Base Ball and Pasture.....	181 25
From Lunch Counters.....	578 54
Entrance Fees on Horses.....	2,068 25
For Advertisements in Schedules.....	760 58
Old Lumber, Straw, &c., sold.....	27 41
Note Discounted in Bank.....	984 50
Sundries.....	28 51
Total.....	<u>\$38,818 60</u>

PAYMENTS.

State tax.....	\$8 00
Water rent.....	35 00
Labor.....	292 71
Mechanics.....	402 05
Lumber, Glass, &c.....	698 13
Repairs.....	219 47
Stationery.....	36 66
Printing.....	841 65
Postage.....	362 48
Advertising.....	980 89
Schedules.....	671 50
Dues to Trotting Association.....	56 00
Rent of tent.....	50 00
Architects for plans for proposed grand stand.....	300 00
Fair supplies.....	105 74
Music.....	271 58
Telegraphing.....	10 80
Freights.....	4 43
Express.....	5 15
Hay, straw, fodder and poultry feed.....	494 19

Judges.....	\$84 00
Police.....	465 50
Clerks.....	307 75
Turnstile men.....	216 43
Detectives.....	93 00
Attendants and guards.....	539 00
Salaries.....	700 00
Lunch counter.....	399 58
Society dining room.....	313 77
Premiums.....	12,644 25
Diplomas and medals.....	165 41
Note paid in bank.....	1,000 00
Sundry Fair expenses.....	318 78
Balance on hand this date.....	10,225 80
Total.....	\$33,818 60

ANNUAL REPORT OF THE BOARD OF DIRECTORS OF THE BURLINGTON COUNTY AGRI- CULTURAL SOCIETY.

*To the President and Stockholders of the Burlington County
Agricultural Society :*

Another year has passed and now as is our custom we proceed to give you a brief resume of its doings. Our Treasurer has made such an eloquent report there seems to be little necessity for us to waste much rhetoric in demonstrating to you the manner of our getting and spending. By his report you see fortune has smiled upon our efforts and placed us in a position where we can at least relate a pleasant story.

Commencing last year with a small balance in our Treasury, which was principally consumed by outstanding bills and expenses, we now surrender our trust with our debts and obligations mostly paid and a balance of \$10,225.80 in our treasury. To accomplish this result we were favored with a week of dry and pleasant weather. We printed and distributed for months before the fair 10,000 schedules, 40,000 trotting slips, 10,000 large posters, 125,000 flyers, advertised extensively in divers ways in our tributary large towns and cities and in the surrounding country; increased our premiums and attractions and held the fair six days instead of four.

The result was we had fifty-seven thousand eight hundred and

twenty admissions, an increase of thirteen thousand three hundred and ninety-six over the preceding year. The receipts from all sources amounted to \$32,318.60, an increase of \$9,671.88 over last year. The grand stand returned \$2,831.75, an increase of \$882.69, and the refreshment stands and privileges increased \$254.63. There were thirteen hundred and twenty-two meals furnished at our guest building, at a cost of \$303.77, or about twenty-two cents apiece. The number of exhibits entered was about seven thousand two hundred and twenty-eight, an increase of about one thousand.

The improvements consist of a new express office, twenty by thirty feet, a new outlet to grand stand, an addition of one hundred feet to small stand, two ticket offices, barber shop, new tin roof on barn, new show cases, two new refreshment stands, and some repairs, the total cost being \$1,370.75. Our buildings are insured for \$19,665, placed as follows: The Mount Holly Insurance Company, \$4,200, the Norwich, Conn., Insurance Company, \$1,000, and the Burlington County Association, of Medford, \$14,465.

Our premiums amounted to \$12,644.25, an increase of \$1,648.25 over last year.

On account of receiving more or less criticism from stockholders and exhibitors about the composition of our committees who act as judges it may be well to state we spend much time and careful thought in making them up. We first select from our stockholders those we think on account of knowledge and judgment are best calculated to serve. Then we solicit prominent citizens from all parts of the county to send us the names of those ladies most noted for skill in the different work for which we offer premiums, and when we cannot obtain by soliciting the proper talent to act as judges we frequently employ experts from different portions of this and other States. With all this effort we frequently receive declinations from those we honor, even with the added inducement of free admission and free dining, and are forced in the exigency of incomplete committees to solicit an undue preponderance of near-by ladies. Hence much of the criticism.

Our railroad service was the most complete in our history. Superintendent Bannard, and his able assistants, deserve our

warmest thanks for the liberal provision in trains, and the speedy manner in which they moved to and from the grounds the 32,000 of our visitors who came by rail.

The prolongation of our fair from four to six days, although increasing our expenses, has not only been a financial success, but has increased our attendance, given our exhibitors a longer time to display their wares, the visitors more leisure to view the beautiful and varied productions that crowd our buildings and grounds, and has given the directors more ease and comfort in the management and some time to view the wealth of production the fair had called around them.

The character of our exhibits is constantly improving and the number increasing, necessitating a continued outlay for more land and buildings. This want we partially supplied by the erection of a large tent, but in the future if we properly provide for exhibitors we must increase our building capacity one-half.

In our last annual report, as the result of our travel, observations and calculations, we recommended the erection of a large and convenient grand stand, but the high cost admonished us we had better delay its construction until another year's surplus was added to our treasury. We now believe we have sufficient to warrant a commencement, and also think our visitors should never again be crowded into such a mockery of a place to see as is our present grand stand. This structure has been outgrown for its present uses, but will make with some alterations an admirable show-building and supply an absolutely necessary want.

There seems to be no limit to the possibilities of this Fair, and that direction which is the most broad and liberal in its management, in its provision for room in land and buildings, will meet with the greatest success. Hoping you will see these changes in the same light, we leave the further consideration of them to our successors.

These reports were adopted.

MOORESTOWN AGRICULTURAL AND INDUSTRIAL SOCIETY.

OFFICERS FOR 1887.

President.....	LEVI BALLINGER.....	Moorestown.
Vice-President.....	GEORGE L. GILLINGHAM.....	Moorestown.
Recording Secretary.....	FRANK GARRIGUES.....	Moorestown.
Corresponding Secretary.....	WILLIAM M. PAUL.....	Moorestown.
Treasurer.....	JOHN M. LIPPINCOTT.....	Moorestown.

EXECUTIVE COMMITTEE.

BENJAMIN H. GILLINGHAM.....	Moorestown.
CHALKLEY B. ZELLEY.....	Moorestown.
MAURICE B. COMFORT.....	Moorestown.

DIRECTORS.

BENJAMIN H. GILLINGHAM.....	Moorestown.
CHALKLEY B. ZELLEY.....	Moorestown.
MAURICE B. COMFORT.....	Moorestown.
SAMUEL L. BURROUGH.....	Merchantville.
SAMUEL S. HUSTON.....	Hartford.
SAMUEL H. GRISCOM.....	Ellisburg.
LEVI ROGERS.....	Hartford.
DAVID ROBERTS.....	Moorestown.

The eighth annual fair will be held on the 8th, 9th and 10th of June, 1887. The society has decided to hold no fall fair this year.
Premiums paid 1886, \$917.75.

CAMDEN COUNTY.

CAMDEN COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1887.

President.....	EZRA C. BELL.....	Mount Ephraim.
Vice President.....	JOEL HORNER.....	Merchantville.
Secretary.....	GEORGE T. HAINES.....	Haddonfield.
Treasurer	J. STOKES COLES.....	Haddonfield.

DIRECTORS.

THEODORE HIDER.....	Blackwood.
JOEL HORNER.....	Merchantville.
EDWARD BURROUGH.....	Merchantville.
S. L. BURROUGH.....	Merchantville.
AMOS E. KAIGHN.....	Ellisburg.

DIRECTORS TO STATE BOARD.

EDWARD S. HUSTON.....	Haddonfield.
VAN BUREN GIFFIN.....	Kirkwood.

REPORT BY GEO. T. HAINES.

The annual meeting of the County Board was held at Camden, November 30, 1886, President E. C. Bell in the chair.

Representatives were present from the Farmers' Association, Haddon Grange, P. of H., Union Grange, P. of H., and visitors from Burlington and Gloucester counties.

The following resolutions from the Farmers' Association, were read :

No. 1, adopted as follows :

WHEREAS, The continued depressed condition of the agriculturists of the country, and the strong competition they are compelled to meet from every section of our own country, as well as from Canada and Europe, compels us to abandon or curtail the acreage of some of our staple crops ;

AND WHEREAS, The protection offered by the present tariff laws of our country is insufficient to protect us from importations of agricultural productions of foreign nations, thus compelling our lands to remain idle which could otherwise be profitably cultivated ; therefore be it

Resolved, That we hereby call upon the Congress of the United States to revise the present tariff laws of the country so as to more fully protect the agricultural interests, and especially those sections of the law relating to the duty on cereal and vegetable products ;

Resolved, That our delegates to the County Board be directed to present these resolutions at the next meeting and urge their adoption and the forwarding of the same to our State Board of Agriculture at its next session.

Resolution No. 2 was also read and largely commented on, both from our own and neighboring counties, but was not adopted. It was as follows, viz :

WHEREAS, The continued depressed condition of the farming industry of this section of the State is a source of anxious solicitude to all classes, and especially to those whose farms are encumbered with mortgaged debts ;

AND WHEREAS, There is abundant capital in the money centres of the country seeking investment at three a one-half to four per cent., while the average farm mortgage bears six per cent., and when the borrower pays the tax and five per cent. he is in reality paying over the present legal rate of six per cent ; therefore, be it

Resolved, That we deem essential to revive the prosperity of the agricultural industries of the State that the legal rate of interest be reduced to five per cent ;

Resolved, That our delegates to the County Board be requested to present this preamble and resolution to the Board and ask that they endorse and forward to the State Board at its next annual meeting.

D. W. Horner, of Stockton township, read a paper on truck farming which opened up and brought out a considerable discussion and for which a vote of thanks was tendered and he requested to produce the same at the meeting of the State Board.

George M. Rogers also read a paper on marl and its advantages, which was listened to with interest, but the time for adjournment being at hand discussion was cut short.

A large number of circulars, with list of questions as prepared by State Board, were sent to interested farmers, but from only

two were responses received ; otherwise the secretary would have been able to give a much fuller statistical report than he now can. The largest wheat field in our county last year was ninety acres, from which was harvested twenty-seven hundred bushels. Some very large oat crops were gathered, as were also some valuable acres of truck, such as peppers, citron, tomatoes, &c., but prices ruled low.

CUMBERLAND COUNTY.

CUMBERLAND COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1887.

President.....	MORRIS BACON.....	Greenwich.
Secretary.....	W. O. GARRISON.....	Bridgeton.
Treasurer.....	T. F. BAKER.....	Bridgeton.

REPORT BY W. O. GARRISON.

The farmers of Cumberland county look upon the past year as a fair average season, bringing reasonable crops but low prices.

They are accepting it as a fact that Western competition in staple products is a stern reality, and that the successful farmer in South Jersey is he who studies the wants of the market and aims to supply them. Hence we see a larger number yearly engaging in the growing of truck. This leads to higher fertilization and thus indirectly to larger crops of grain and hay.

The peach crop is gaining in importance and is looked upon as the most profitable of all farm crops. It is supposed that there are at least eight hundred thousand peach trees in the orchards of the county, and I am assured by reliable nurserymen that at least one hundred and twenty thousand will be planted out this year.

In the absence of any organization of peach growers, I have not been able to get accurate statistics of the last crop, but from the returns from freight agents, packing houses and an estimate of the quantity consumed in the home market, the crop could not have been less than three-quarters of a million baskets, netting the farmers about \$400,000.

To show the profit of a well managed orchard I will again refer to that of Thos. E. Hunt, Esq., of Greenwich. In the summer of 1885 Mr. Hunt gathered from this orchard of one thou-

sand two hundred trees two thousand one hundred and ninety-two baskets of fruit, for which he received net \$1,527.51. From the same orchard, summer of 1886, he gathered four thousand three hundred and eighty-one baskets, for which he received net \$2,080.-59, or a total from ten acres in two years of six thousand five hundred and seventy-three baskets, for which he received \$3,608.05 net.

So important has this crop become that the growers have arranged to organize a Peach Grower's Exchange for the distribution of the product.

The tomato crop is becoming an important one, as the numerous canning houses make a home market for about eight thousand tons, for which they pay an average of \$6.00 per ton. As the average yield is nine to eleven tons per acre it is a fairly profitable crop. Some growers succeed in doubling the average, while I am sorry to say others seem content if they produce six to seven tons per acre. This summer Smith Sheppard gathered seventy-three and one-quarter tons from four acres; Howard Sharp one hundred and twenty-two tons from eight acres; Frank Sharp one hundred and eleven tons from eight acres; Josiah Bacon ninety-five and one-half tons from seven acres.

Early tomatoes for the city market are much more profitable, but as they require more skill and labor are not so largely grown. Joseph Burt reports proceeds from one hundred and fifty-eight square rods as \$175.

Several others had good yields and secured good prices but unfortunately kept no accurate account of receipts.

The strawberry crop was good. Prices were low for medium and inferior stock, but large handsome berries, well handled, sold at remunerative prices. Here as elsewhere we are learning to look for our profits from the quality rather than the quantity. Samuel P. Fithian, of Greenwich, picked two thousand seven hundred and nine quarts of Sharpless from a-half acre, netting him \$223.89.

To form any idea of the extent of small fruit culture one must visit the railroad stations during the shipping season and see the long trains of freight cars laden with berries.

The grape crop was almost a failure. In Vineland the crop was twelve hundred tons short. The wine product was, of course,

correspondingly light. Many wine makers have little but empty casks to show for their work. It is estimated that not over twenty thousand gallons were made on the whole Vineland tract.

The grain and hay crops were above the average. This is especially true of oats and hay, owing to the warm wet season.

Morris Bacon reports from six acres wheat two hundred and fifty-two bushels—forty-two bushels per acre; and five acres of corn yielded three hundred and seventy-five bushels, an average of seventy-five bushels shelled corn per acre.

Charles Richman reports four hundred and forty bushels of oats from eight acres.

These are not phenomenal yields, but are only a fair index of what any farmer may accomplish by high cultivation.

The potato crop, though only about eighty per cent. of last year's yield, was good. W. W. Whiting, of Vineland, reports five hundred bushels of Mammoth Pearl per acre. Perhaps the largest crop grown in the county was by Eli Minch, of Shiloh, who now has on hand over five thousand bushels of Silver Lake grown by him.

The sweet potato crop was fair but the prices ruled so low as to almost discourage the growers, some of them not receiving enough for shipments to pay freight charges.

Poultry raising is a very important item to the farming community; two thousand three hundred and thirty tons of dressed poultry were shipped, netting the growers about \$650,000. Add to this a fair estimate for value of eggs produced and we have a total of say \$750,000 from the poultry interest.

I have not secured sufficient data to make a report of the extent of the dairy interest, but know that the number of cows kept is increasing and that there is an increasing interest in full blood and high grade stock.

There are several breeders of full blooded registered stock. Among the finest herds of Jerseys, that of R. J. Buck would be noticeable.

Among Holsteins the herd of C. O. Davis is worthy of special notice.

I have mentioned these because they have had more to do with developing an interest in blooded stock than any others.

Our County Board has held three public meetings, all well attended and full of interest.

The County Agricultural Society is prospering as never before. Increase of attendance and exhibits made it necessary to increase accommodations. The grounds were enlarged and new buildings erected, still there was not room for exhibits or visitors. Still further improvements are in contemplation.

Our agricultural community is alive and determined to take no second or third place in the struggle for supremacy.

ESSEX COUNTY.

OFFICERS OF THE ESSEX COUNTY BOARD OF AGRICULTURE.

President.....I. S. CRANE.....Livingston, N. J.
Vice President.....M. H. CANFIELD.....Caldwell, N. J.
Secretary.....J. H. M. COOK.....Caldwell, N. J.
Treasurer.....AUSTIN E. HEDDEN.....Verona, N. J.

DIRECTORS.

E. WILLIAMS,
H. F. HARRISON,

J. H. BALDWIN,
W. W. BURNETT,

A. P. WILLIAMS,
R. C. CAMPBELL.

DIRECTORS TO STATE BOARD.

WM. DEICKS,

AUSTIN E. HEDDEN.

ANNUAL REPORT.

BY J. M. H. COOK, SECRETARY.

The year 1886 has waxed old and passed away. The new year has come, has taken possession of the destinies of mankind and set the dial of time one figure ahead. Another vacation for the farmer is at hand, affording us a better opportunity to read and think, meet together, devise and mature plans for the advancement of the interests of agriculture in our State.

A philosopher has well said : " Inconstant change is the constant law of nature." The flowers change into fruit, the seed into the stalk, the boy into the man, and the great problem for us to solve is how to change our tactics so as to keep pace with the ever-advancing spirit of the times. At no time has it ever been more necessary for farmers to unite their energies and marshal their strength in order to maintain the position and prominence which the importance of their vocation demands.

Like a battle-field which is over-ridden and destroyed by the

march of opposing armies, so the farmer's occupation seems to be the innocent victim which falls a prey to the antagonistic powers of labor and capital.

The one by its united strength forces the price of labor higher than the farmer can afford to pay, and thus induces the more intelligent laborer to seek other occupations. The other, by its organized monopolies, reduces the price of our farm produce, and influences legislation so as to levy upon the farmer a large proportion of all the taxes, both direct and indirect.

It would seem that relief must come in the line of agricultural organization, and by our united influence we should exert our proper and legitimate power in the halls of legislation, to the end that such unjust, (because unequal) systems of taxation which discriminate against the interests of agriculture be abandoned.

It is quite impossible for the farmers of this county to compete successfully with the large and fertile fields of the West in the productions of cereals, and so we find that every year we are gravitating toward that system of farming which supplies our markets with such produce as cannot be brought from a distance, and we are making a specialty of market gardening, the retail milk business, and the culture of fruits, flowers and green-house plants.

At least ninety per cent. of the milk raised in the county is retailed in the county, and very often from the producers' own wagon. And as a large part of our land is not tillable but affords good pasturage, it is evident that the production of milk will continue to be the leading industry of our county. Yet at the low wholesale prices which farmers are receiving, viz: two and a-quarter cents in summer and three and a-quarter cents in winter, there is only a small margin left, after paying hired help and incidental expenses.

Therefore, quite a number of good dairy farms in this county are unoccupied. Mr. I. S. Crane reports that there are five farms, about seven hundred acres, in his vicinity now vacant. About eighty-five per cent. of our farms are worked by the owners.

Market gardening seems to be the next most important industry. It is quite impossible for me to form an estimate of the ex-

tent of this business, but the large markets of Newark, Orange and Montclair are principally supplied from the county. Mr. Wm. R. Ward estimates that there are from four to five thousand bushels of strawberries, two thousand to three thousand bushels of currants, two thousand bushels of raspberries, thirty to forty tons of grapes, eight thousand to ten thousand bushels of pears raised in his township alone.

The cultivation of flowers, green house plants, and market vegetables under glass is a growing industry in this county, and our nearness to a ready market insures success to an expert in the business.

Mr. F. C. Goble, a prominent florist of Verona, kindly furnishes me the following interesting items.

There are about fifty different individual firms engaged in growing vegetables and flowers under glass by the aid of artificial heat. (This does not include cold frames and hot-beds, of which there are acres in and around our cities.) It furnishes employment to over two hundred men and boys throughout the entire year, and in the busy season at least twice that number are engaged. The amount of glass used is at least three hundred thousand square feet, or nearly seven acres, for growing of cut flowers, bedding plants, and the starting of vegetable plants. The amount used for forcing vegetables is about two hundred thousand square feet of glass, or about five acres. The principal vegetables grown are lettuce, radishes, beets, cucumbers and rhubarb.

The houses, if placed end to end, would make a continuous house eleven feet wide, seven and three-quarters miles long. The amount of money invested in buildings would not be less than \$500,000.

Wheat, oats and hay were our most successful crops. Oats were super-extra. The Welcome oats on my farm yielded forty-six pounds to the bushel. Mr. I. S. Crane had ninety-four bushels of July wheat on less than three acres; his oats produced forty-five bushels to the acre, and weighed thirty-five pounds to the bushel.

The yield of corn in our county was only about seventy-five per cent. of that produced the previous year. The drought and cool weather were unfavorable.

From some unknown cause a blight overtook the potatoes and they rotted so that only about half a crop was stored.

The drought affected the strawberry yield very materially. Beets and turnips also suffered. More thorough tillage and better fertilizing are improving the farms in our county.

Our principal forage is corn and clover; some millet, sorghum and Hungarian grass is raised for fall feeding. Roots are generally regarded most healthful for winter feeding. Some of our dairy men consider the ensilage indispensable.

Horses, cattle and poultry are raised to some extent. No contagious disease has prevailed among these, although supposed cases of glanders and pleuro-pneumonia are reported from Cedar Grove and Verona.

The Telford roads maintained by our county are a decided luxury, but our system of maintaining roads generally is very inadequate to supply profitable and pleasant highways. Under the present law every man does what is right in his own eyes. The road tax, which has been levied by himself, is worked out according to his own sweet will. The material used is anything that may be handy. An opportunity to kill two birds with one stone is always improved. If we dig a well in mid-winter, we deposit the excavation in the middle of the road on a considerable depth of snow and ice, thus rendering the pleasure of sleigh-riding rather questionable, at least in spots, but then the farmers of Essex county do not live for pleasure altogether, and these temporary annoyances set lightly, provided we get the odds and ends all done up in winter so that we are free to devote our energies to the farm in the early spring; and our roads after all are very passable, for we are a conscientious people, and withal fairly enterprising. They are making some Telford by contract in parts of our county.

The second annual fair of Essex county was attended with marked success, both as to the merit of the exhibits, and its financial result. The quality of the exhibits in the horticultural department was pronounced by prominent judges to be equal to any in the State.

The fair was managed by a joint committee from Livingston and Caldwell Granges. It was held in the Montclair Rink, a point central in the county, and affording ample space and convenient railroad facilities.

Our County Board is in a thriving condition. It is composed

of members elected from the various agricultural societies of our county. The regular meetings are held on the first Wednesday of March, June, September and December.

It numbers at present about thirty members, representing the Livingston and Caldwell Granges. These two Granges number from sixty to seventy members each, and have regular weekly meetings throughout the year. They are doing a good work in the interest of the order in the line of public lectures and social entertainments.

GLOUCESTER COUNTY.

GLOUCESTER COUNTY BOARD OF AGRICULTURE

OFFICERS FOR 1886.

President.....	CHALKLEY DUELL.....	Wenonah.
Vice-President.....	THOMAS BORTON	Mullica Hill.
Secretary.....	GEORGE H. GAUNT.....	Paulsboro.
Treasurer.....	DAVID S. ADAMS.....	Mickleton.

DIRECTORS.

CHARLES HERITAGE.....	Mickleton.
ELLISON HORNER.....	Mullica Hill.
JESSIE BROWN.....	Swedesboro.
FRANK B. RIDGWAY.....	Mullica Hill.
JAMES WHITE.....	Mullica Hill.

DELEGATES TO THE STATE BOARD.

THOS. BORTON,

GEORGE H. GAUNT.

REPORT BY GEORGE H. GAUNT.

Our County Board has not as yet held any agricultural fair. We have four regular meetings during the year. The first, the annual meeting, February 20th, and a special meeting February 27th, when Prof. George H. Cook was with us, and gave us a practical and instructive talk, which was much appreciated.

At our last meeting, November 20th, the President of State Board was present and gave us an address which was valuable and full of interest. As the year 1887 begins, farmers are trying to devise some plan by which they may make a more satisfactory financial footing at its close than we can show for the year just past.

We have not much to say that is very flattering of the prospects of the agriculturists of Gloucester county. While we have probably as great a diversity of soil as any county in the State, yet financially we are no better off than other sections.

Real estate that has been offered at public sale within the last few months hardly found a purchaser.

At our last meeting steps were taken to ascertain the practicability of forming a Farmers' Produce Exchange, one having been established in Delaware that, so far as we can learn, has given good, satisfactory results.

The farmers have almost come to the conclusion that it may pay to give more attention to marketing their products than to expending all of their time and money in producing, and then turn them over to the commission man and receive what is left after he is satisfied.

CROP REPORT.

The County Board of Agriculture has fifty-three members. The Granges have three hundred and fifty members.

Sweet and white potatoes, early tomatoes, watermelons, citrons, egg plants, corn, wheat and hay are the principal crops grown. Sweet potatoes are the leading crop in Gloucester county. Statistics as taken in 1880 give nine hundred and seventy-seven thousand four hundred and twenty-two bushels, against two million eighty-six thousand seven hundred and thirty-one bushels in the whole State. Thus Gloucester county produced within one hundred and fifteen thousand nine hundred and forty-three bushels of all the rest of the State. The same authority gives Gloucester county three hundred and fifty-three thousand five hundred and eighteen bushels of white potatoes, a larger yield than any other county except Burlington and Monmouth.

In market gardening it is only exceeded by Camden and Hudson counties.

In corn the average, thirty-five and one-fourth bushels, is only exceeded by Burlington one and one-half bushels per acre.

Egg plants in some cases have done well. A. P. Rambo reports having taken from one acre, \$350.

Cox Brothers report selling about \$3,000 worth of egg plants.

Low & Brother from two and one-half acres sold \$700 worth of citrons.

Watermelons were generally poor, on account of wet weather.

Late cabbage was poor on account of dry weather late in the season.

Improved machinery is generally used.

Alsike red clover and timothy hay, corn and rye are the forage crops grown.

Our roads are generally good. While the natural road bed may be sand or loam, they are generally ridged and faced with gravel and maintained under the general law by overseers.

About two-thirds of our farms are farmed by owners and one-third by tenants.

Some horses, cattle and poultry are raised; sheep generally sold off and bought in each year; swine, not so many raised as a few years past.

We have not much disease.

Not enough help. Wages from \$15 to \$25 per month and board, or from \$1.25 to \$1.50 per day and board themselves.

Not much has been done to enforce the law as to the English sparrow. In our township the Town Committee are authorized to offer a bounty for their heads. Some gunners are shooting them for market. They are said to be as good as reed birds and bring nearly as much.

HUNTERDON COUNTY.

HUNTERDON COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1887.

President.....JOHN T. COX.....Readington, N. J.
Vice-President.....NEWTON B. RITTENHOUSE.....Sergeantsville, N. J.
Secretary.....E. M. HEATH.....Locktown, N. J.
Treasurer.....E. E. HOLCOMBE.....Mount Airy, N. J.

BOARD OF DIRECTORS.

JAMES LANE.....Readington Grange.
JOSEPH HAGAMAN.....Sergeantville Grange.
JOHN W. LAQUERE.....Kingwood Grange.
E. E. HOLCOMBE.....Ringoes Grange.
URIAH SUTTON.....Locktown Grange.
H. F. BODINE.....Pomona Grange.
WILLIAM J. CASE.....N. J. Fruit Exchange.

DELEGATES TO STATE BOARD.

H. F. BODINE, two years. J. B. FISHER, one year.

SOCIETIES REPRESENTED.

Readington Grange, Seargeantsville Grange, Ringoes Grange, Locktown Grange, Kingwood Grange, Hunterdon County Pomona Grange, New Jersey Fruit Exchange.

HUNTERDON COUNTY CROP AND SOCIETY REPORT.

BY H. F. BODINE.

Our County Board has held but two meetings during the year. The first was held on the third Saturday in August, at Locktown. Owing in part to the busy season but few attended the meeting. We were favored with the presence of Mr. William S. Taylor, the efficient Secretary of the State Board, and Mr. Franklin Dye, Secretary of the Mercer County Board, who both gave excellent addresses.

The other meeting was held at Flemington, on the third Sat-

urday in December. At this meeting Mr. Taylor was also present and again spoke on the organization of farmers. At this meeting a heavy storm kept many away. There is a lack of interest among the agriculturists in organization. Indeed, if we take the indifference manifested, we are led to believe that the farmers of our county prefer to have every other interest organized against them. There are only six organizations of farmers in the county. Five of these are Granges.

The year 1886 with us has been fairly prosperous; the yield of wheat was the best ever grown. An average of twenty-five bushels per acre is reported from many sections, with one report of thirty-six bushels per acre from Martin's Amber. The rye crop was also an excellent one—from twenty-five to twenty-eight bushels per acre. Owing to the backwardness of the spring, corn was only a medium crop; however, where planted before the heavy rains set in a fair crop was gathered. The oat crop was the best grown since 1860, yield ranging from forty to forty-five bushels per acre. A severe drought later in the season was detrimental to the buckwheat crop and it was very much below that of 1885. The crop of hay was large, different sections reporting the yield from one and a half to three tons per acre, and of excellent quality, so that with due care the husbandman feels that his stock will be well kept.

There was a good crop of apples throughout the county, and generally they have kept well; the quality was excellent; prices ruled low, so that growers seemed to get but little for their labor, still they are as well off as others.

Again it is our privilege to report a full crop of peaches, and this has become one of the leading products of the soil. Nearly all of the farmers are engaged in the setting of trees and cultivation of this luscious fruit. The crop from the county was large. Prices early in the season ruled low, but later were better, so that while those with early fruit fared badly, others were encouraged. Even the low price obtained has had no discouraging effect, for I understand that already the nursery stock is nearly all sold, and land that is specially adapted to the growth of this fruit has sold for better prices than that for general farming purposes. Owing to the low price of fruit, and the many discouragements of growers, a "Fruit Exchange" has been organized since the peach season.

closed, to be known as the "New Jersey Fruit Exchange." The design of the exchange is not for the exclusive benefit of fruit growers and dealers in our own county, but to take in the whole State, so that when it comes into successful operation the growers of all kinds of fruit throughout the State shall reap its advantages. Indeed there is no good reason why all of the products of our State should not be sold through it. Being in its infancy, with no opportunity to test its ability, we can only wait and see, but if brokers can sell their stocks and bonds through an exchange, there is no reason why farmers should not do the same. Fruit growers throughout the State may have correspondence with the Exchange by addressing Mr. John B. Case, Flemington, N. J., the present Secretary.

Farm labor has commanded about the same price as in 1885. In some places help has been difficult to procure, particularly during the busy part of haying and harvesting season but this has been local. One cause of this in the lower part of the county is the stone quarries, which have made wonderful developments and take a great deal of help from the farms. This, with the desire of farmers' sons to enter banking and counting houses, and other places where labor is thought not to be as arduous as on the farm, makes help scarce, and farmers are compelled to use the more improved machinery.

There has been a strong desire on the part of some to test poultry raising on a large scale. Incubators and brooders have been brought into requisition, but your reporter has not found any who have grown wealthy enough to report any special success in this direction.

There has been great progress made in the keeping and management of live stock for the past few years. Formerly in travelling through the county and seeing stock which had been badly kept, it was quite a common thing to hear many farmers complain that their cattle had wintered badly, and many of them had the *hollow horn*, in fact the entire animal had the appearance of being hollow, but since farmers have found out that the best must be made of everything, they find it pays to be more particular in breeding, rearing and caring for their animals. There has been no contagious disease of stock. One case of hog cholera was reported but this proved to be false. Our farmers have

learned that they cannot compete with the West in raising grain and have turned their attention more to the cultivation of fruits. Among the successful peach growers is William J. Case, of Pitts-town. He raised the past season eleven thousand nine hundred and twenty baskets, which netted fifty-two and one-tenth cents per basket, amounting to \$6,210.32. J. W. Duckworth, of Patten-burg, did not give a report of his peaches sold. He is a suc-cessful grower and says, "I have been in the peach business for about fifteen years and have found it a success. They need to be kept well cultivated, pruned and wormed. I generally use about three hundred pounds of No. 1 fertilizer to the acre, and would prefer a good clay soil for setting trees."

Among the small fruit growers reported are Thomas R. Hunt and C. T. Hunt. Thomas R. reports ten thousand quarts of strawberries grown on three acres of ground, and eight thou-sand quarts of raspberries on four acres. He considers these good crops, but says, "prices were too low for any profit;" fer-tilizes his ground with Williams, Clark & Co's bone meal, from eight hundred to one thousand pounds per acre, and says he has raised many crops of small fruits that paid him well. C. T. Hunt is very successful in growing small fruits and truck for market. From his farm eight thousand quarts of strawberries are reported from a trifle over an acre of ground. He also raises for market tomatoes, potatoes, sweet corn, cabbage, &c. There are many other growers of small fruits and truck, but we have no report of them. Dr. G. H. Larison, of Lambertville, states, "that the crop of cherries in the gardens and vacant lots of that city were good. The kinds grown are principally Early Richmonds and the old red Pie cherry, the latter a seedling which is growing luxuriantly in nearly every garden. The Early Rich-mond ripens about two weeks earlier and compose about one-fifth the number of trees here, each bearing equally well. The whole city's crop is estimated at about eight hundred bushels for 1886.

These kinds of fruit trees from 1842 to 1862 were in all this region infested with an insect that stung the limbs and twigs, from which they became covered with black knots the size of a hen's egg, injuring them badly and killing many trees, in so much that for about twenty years this fruit could not be grown.

Since 1862 there is scarcely a knot found. The rapid growth of the trees, the small space on which they grow and their early bearing gives them a foremost place with all. They are used to an advantage every way. As to growing them in orchards, this has been proved by Wm. C. Price, Dr. Larison and others, who have planted their grounds full in orchard form, and like the peach the better they are cultivated the larger the crop, with better fruit. They grow about as fast as a peach tree, and will bear as soon and many years longer. The market price here has been from eight to ten cents per quart until the last year, when nearly all who want them have grown from one to a half dozen trees in each of their gardens. In propagating them, the numerous young and vigorous sprouts springing up are either left to grow or are transplanted.

There is but one canning establishment in this county; this is controlled by John H. Butterfoss, and located at Lambertville. This only operates during the tomato season. The tomatoes are grown by the farmers near the place and taken to the factory, receiving \$7 per ton. From eight to ten tons is considered a fair average per acre. Some growers on extra land have produced fifteen tons per acre, thus netting the grower a handsome profit. The lateness of setting the plants, and the early frost were damaging this year. Mr. Butterfoss put up three hundred and sixty-six thousand cans, and owing to the frost was left with about forty thousand empty cans.

Should the Fruit Exchange become a success doubtless other canning and evaporating establishments will be started and thus help to consume the great amount of fruit that is too often forced upon the market and will prove a good investment for those enterprising enough to take hold.

Through the courtesy of the Freight Agents of the Pennsylvania and New Jersey Central Railroads, I have reports of the shipments of peaches over their roads.

Pennsylvania Railroad, baskets.....	298,781
New Jersey Central Railroad.....	664,500
Total.....	963,281

I wrote Mr. J. J. Heckman, General Freight Agent of the L. V. R. R., but he has not given me the number of baskets ship-

ped over their road. Mr. Vanzandt, the agent at Flemington, gives the number of baskets at that station as 52,600, which would make the number of baskets shipped over the different roads 1,015,881, with five shipping stations on the L. V. R. R. not reported. Of these 391,594 baskets were shipped from Flemington alone. At this point it is proposed to make the headquarters of the "Fruit Exchange." Good judges put the crop of peaches grown in the county at 1,500,000 baskets.

In addition to other matters sought by your reporter, I have tried to get some facts in reference to the dairy interests of the county, but have not succeeded as well as I should have liked. A great deal of milk in the northern and eastern part of the county finds its way to the New York market, but how well the farmers are satisfied with their sales I cannot report.

Four creameries are in successful operation in the county, viz: Little York, Sergeantville, Oak Summit, and Locktown. I have written to either the secretaries or superintendents of these for information as to their workings and have reports from the following: Mr. P. H. Eckel, treasurer of Little York, says—"We received during the year four hundred and twenty-one thousand six hundred and sixteen pounds of milk, made sixteen thousand four hundred and seventy-six pounds of butter and nine thousand two hundred and fifty-two pounds of cheese. Average price paid for milk during the year, sixty-nine and one-sixth cents per one hundred pounds; average price received for butter, twenty-six and one-twelfth cents, and for cheese, three cents." Mr. Eckel says, "we did not make cheese all the time; we also paid for separator out of milk during the year; that is why our price for milk averages low." Mr. George W. Hockenbury, Superintendent of Locktown Creamery, gives the report for their Creamery for the year ending December 31st, 1886, as follows: They have received during the year eight hundred and fifty-six thousand six hundred and ninety-one pounds of milk, have made twenty-five thousand six hundred and eighty-three pounds of butter and fifty-one thousand eight hundred and fifty-two pounds of cheese. The average net price for butter has been twenty-six and four-fifths cents per pound, and for cheese five and four-fifths cents per pound. The average price paid for milk has been \$1.01 $\frac{1}{12}$ per hundred weight.

They have paid for manufacturing the milk received \$1,752.17, and have sold their butter for \$6,892.81, and cheese for \$3,015.12. Their butter is all made into prints and sold at the factory.

Mr. George H. Boyd, Superintendent, and Joseph Williamson, Secretary, of Sergeantsville Creamery, report that from January 1st, 1886, to January 1st, 1887, they have received eight hundred and eighty-seven thousand one hundred and fifteen pounds of milk, have made twenty-nine thousand seven hundred and seventeen pounds of butter and fifty-five thousand five hundred and six pounds of cheese. The average price received for butter has been twenty-seven and one-half cents net, and for cheese five and one half cents net. Butter has sold for \$8,172.17 net, and cheese for \$3,052.83 net. The average price paid for milk received, eighty-three and two-thirds cents per hundred weight. Their butter is sold in Philadelphia market.

There are five subordinate and one Pomona Grange in the county. I am indebted to their secretaries for a report of the following :

READINGTON GRANGE, No. 56.

Reports a membership of thirteen. Seven farms belong to members, averaging one hundred and twenty acres each. One hundred acres sown to wheat, with an average of twenty-one to twenty-two bushels per acre ; fifty acres with rye, at an average of twenty-five bushels per acre ; one hundred and forty acres of oats sown, averaging thirty-eight bushels per acre ; one hundred and seventy acres in hay, yielding one and a quarter tons per acre. Meetings reported, "not very frequently." Amount of purchases for the year, \$400.

This Grange is the smallest in the county, but seems made up of a membership that does not become discouraged at trifles, but waits for a better day to dawn on them.

SERGEANTSVILLE GRANGE, No. 101.

Reports twenty-seven farms belonging to members, averaging seventy-four acres each—three hundred and twenty-five acres sown to wheat, with an average yield of twenty-five bushels per acre ; one hundred acres of rye, average yield

twenty-five bushels per acre; three hundred and fifty acres of corn, averaging forty bushels per acre; three hundred and fifty acres of oats, yielding forty bushels per acre. Grange meets weekly and has a membership of thirty-seven. The amount of their purchases have been, during the year, \$1000. This Grange is located in a rich farming community, and aside from regular farming and dairying its members are quite extensively engaged in peach culture, and excellent reports are looked for.

STOCKTON GRANGE, NO. 88,

Reports twenty-nine farms belonging to members, averaging eighty-four acres each—one hundred and forty-three acres sown to wheat, averaging twenty-two bushels per acre; seventy-three acres sown to rye, with an average of twenty bushels per acre; three hundred and seventy-five acres of corn, averaging twenty-four bushels per acre; two hundred and ninety-four acres of oats, yielding forty bushels per acre; sixty-eight acres of buckwheat, with an average of only nine bushels per acre; three hundred and twenty-eight acres in hay, yielding one and one-fourth tons per acre. The members of this Grange have sixty thousand four hundred fruit trees growing, which decreases the average for general farming purposes. A membership of fifty-nine is reported, with an average attendance of twenty-five. \$3,300.00 has been the amount of purchases for the past year. The meetings are held weekly, and at almost every meeting topics are discussed. This Grange has the largest membership of any in the county, and has done much for the neighborhood in which it is located.

HUNTERDON COUNTY POMONA GRANGE, NO. 3,

Has a membership of sixty. It meets quarterly at the different subordinate Grange halls in the county. The meeting of the State Board of Agriculture last year was held after the annual meeting of Pomona Grange, and this year before its annual meeting, hence the officers are the same as reported last year, and published in proceedings of State Report, on page three hundred. There has been no report received from the purchasing agent as to the amount of purchases the past year. We may say, however, that there is not as much co-operation in

purchasing through this medium as there should be. We are certain that good arises to the members through these meetings, in discussions and essays, and if all did their part excellent results would follow. At the quarterly meeting, in October, Mr. Franklin Dye, of Mercer county, met with us and gave an excellent address on "The Farmer and His Calling; The Patrons of Husbandry and their Ritual."

The address was delivered in an open meeting, and was appreciated by many who are still "outside the gate." At this meeting the members of the different subordinate Granges had brought with them the products of their farms until the lower part of the hall was well filled, and making an exhibit in its line much better than was shown at our county fair, showing what an organized effort can do.

The farmers throughout the county are feeling the importance of organization. This has been manifested by the correspondents in answer to questions propounded by the Secretary of the State Board. And if some way could be devised whereby some one could canvass our State with as much system as political parties do their work, an untold amount of good would accrue to the agriculturists. I cannot close this report without returning thanks to all those who have assisted me in making it what it is. Only in four cases where information has been asked have my letters remained unanswered. There have been many calls for the State Report and I suggest that plenty of them be printed as they make excellent reading for farmers.

MERCER COUNTY.

MERCER COUNTY BOARD OF AGRICULTURE.

MEMBERS OF FARMERS' CLUBS AND GRANGES.

Societies.	Members.	Delegates.
Pennington Grange.....	25	5
Ewing Grange.....	35	7
Hopewell Farmers' Club.....	23	4
Mercer Grange.....	23	5
Hamilton Grange.....	45	9
Princeton Agricultural Association.....	15	3
Lawrence Grange.....	20	4
Hamilton Township Agricultural Association (Organized in 1884).....	150	30
East Windsor Agricultural Association (Organized in 1885).....	15	3
	851	67

OFFICERS FOR 1886.

President.....	RALPH EGE.....	Hopewell Grange.
Vice-President.....	THEO. CUBBERLY.....	Hamilton Grange.
Secretary.....	FRANKLIN DYE.....	Lawrence Grange.
Treasurer.....	C. H. OLDEN.....	Princeton Agricultural Ass'n.

BOARD OF DIRECTORS.

J. B. HORN.....	Pennington Grange.
WM. A. HOUGH.....	Ewing Grange.
A. L. HOLCOMBE.....	Hopewell Farmers' Club.
WILLIAM B. VAN PELT.....	Mercer Grange.
DAVID MCGALLYARD.....	Hamilton Grange.
FRANKLIN DECOU.....	Hamilton Agricultural Association.
H. E. HALE.....	Princeton Agricultural Association.
G. W. JOHNSTON.....	Lawrence Grange.
WILLIAM S. RIGGS.....	East Windsor Agricultural Association.

DELEGATES TO STATE BOARD.

For two years.....	FRANKLIN DYE.....	Trenton P. O.
For one year.....	J. M. DALRYMPLE.....	Hopewell P. O.

MEETINGS.

The regular meetings of the Board are held at Trenton, on the second Tuesday of June and August, and on the fourth Tuesday of November and February, at 10 o'clock A. M.

MERCER COUNTY BOARD OF AGRICULTURE.

FOURTH ANNUAL REPORT TO THE NEW JERSEY STATE BOARD OF AGRICULTURE, JANUARY 26 AND 27, 1887.

CROP REPORT.

BY FRANKLIN DYE.

The proceedings of the Mercer County Board of Agriculture during the past year have been marked with the usual interest on the part of its members, and the attendance has been good. The annual meeting, held on the fourth Tuesday of February, opened very auspiciously for us, honored as we were by having the President of the State Board of Agriculture, Hon. Edward Burrough, present with us. Mr. Burrough spoke to the great satisfaction of our members. The Board has standing committees on legislative proceedings, State Experiment Station and order of business for the next meeting. Special committees are appointed for special matters of interest. For two years or more we have had a committee on public roads, and after much inquiry and investigation we find that the public roads very generally and the manner of working them need improving. So, also, do the intricate and broken laws enacted for their government. Will not our brother farmers throughout the State aid us in securing better and more attractive highways by devising some better system of road management? A good, clean, well-kept public road is an honor to the neighborhood through which it passes, and such roads enhance the value of the farms bordering them, while a poorly kept, unsightly highway detracts from the value and beauty of an otherwise attractive locality.

At the annual meeting it is required that the President of the Board make a formal address. The address of President Ralph Ege, Esq., at the last annual meeting is considered of general interest, and is submitted as a part of our report.

ADDRESS OF MR. EGE.

Gentlemen of the Mercer County Board of Agriculture :

We are again assembled in annual session and are reminded that another year with its storms and sunshine, its seed time and harvest, its successes and failures, is numbered with the past, and as I offer this, my third annual address, we can scarcely realize that this Board will soon enter upon the fourth year of its existence, but although the time has been so short, yet we feel that our efforts as a society in behalf of the agricultural interests of our county have not been without good results.

Many of the most enterprising, progressive farmers of our county have availed themselves of its advantages, and greatly added to its interest and usefulness by giving us the benefits of their experience and influence, and not only the farmers of our county, but prominent residents of the city have given us their encouragement and support, which we heartily appreciate and which has contributed very materially toward our success.

Our meetings the past year have been characterized by an increased interest and an enlarged attendance, and with reinforcements pouring in, we have not only been able to "Hold the Fort," but to report a steady advance all along the line.

At our last annual meeting we felt that we were sufficiently organized and equipped for effective work, and the order given to forward was met by a prompt movement on every side, and it is with honest pride that we can recall the progress of the past year, and we do not propose to give any order for "forward movements to the rear" at present, but our motto is still "*Farmers to the Front*," and we propose to fight it out on this line.

Our organization is in better condition for effective work than ever before. Its members are encouraged and hopeful, and enter the campaign of 1886 with enlarged experience and with a determination to make this society a power for good to the farmers of Mercer county, striving to awaken a greater interest in, and stimulating a greater love for, our chosen profession, not only as a means to financial success, but on account of its sacred and honored associations. Sacred, because the farmer is a co-laborer and co-worker with his Creator in the production of food for the

sustenance of his dependent creatures; honored as the foundation upon which civilization and society rests; the basis and source of all permanent wealth and prosperity, and without which all other industries, and in fact, the whole structure of our civilization must decay and perish, and if farmers would ever keep in view the high and important position which they occupy in the body politic, instead of being so over-modest in the estimation of their own worth, the front rank would always be *solid* without depending upon the other professions and industries for recruits.

We sincerely hope that the young men of our Society and of our county will keep this ever in view, that they will not only encourage us by their presence at our meetings in greater numbers, but that they will feel a greater freedom in participating in our discussions and deliberations, thus rendering valuable assistance in building up this Society on a broad basis of liberal and progressive ideas, that agriculture may maintain its high and noble position, and that our young men of spirit and enterprise may be attracted to it, instead of repelled and driven to seek their fortunes amid the temptations and allurements of city life.

We need more young men in our local societies, we need an infusion of their young blood and enthusiasm to stir up and stimulate the old veterans to greater activity, and we need more of them in this county organization to increase its usefulness and to maintain it after the older members have stepped off the stage of activity. For the purpose of awakening a greater interest in our Society throughout the county, and promoting and encouraging a spirit of wholesome rivalry and friendly competition in agricultural and horticultural pursuits, arrangements were made at the August meeting of last year to hold an agricultural and industrial exhibit under the auspices of the Board during the month of October.

We had no suitable grounds that were available, and no buildings, our time was limited to a very few weeks, many of our members were novices at the business, yet with these and many other obstacles to overcome, our committees worked so rapidly and faithfully that when the time arrived it found all the arrangements completed for a successful exhibition, and had it not been for the chilling and dampening influence of a two days' storm at the outset, it would no doubt have been very difficult to restrain the ardor and enthusiasm of the managers within proper bounds.

It was one of those periods which "try men's souls," for like Jamie, we had "gone to live in a tent," and the persistent drizzling rain made our quarters decidedly uncomfortable, and we sincerely hope that our merely alluding to the "little unpleasantness" at this time will not cause a shivering sensation to creep over our brother managers who so bravely stood their ground, notwithstanding the odds were against them. With the pouring rain the exhibitors came pouring in from every quarter, showing their faith in the promises of brighter days to come.

Farmers with their sons came, bringing the choicest and fairest of their flocks and herds, and proudly bearing the richest products of the fields, orchards and gardens, and we should not fail to mention that they were accompanied by their wives and daughters with rare and beautiful specimens of their skill and handiwork in such quantity and variety that the spaces which were thought to be ample were soon filled to overflowing, making it necessary to provide additional accommodations. These in turn were soon crowded with the works of art and industry furnished by the ladies of our county and which contributed so immensely to the interest and attractiveness of our exhibition.

Manufacturers came flocking in, vying with each other in the extent and variety of the labor-saving implements and contrivances which modern ingenuity has devised to lighten the farmers' burdens and brighten his fireside. The merchants of our city responded promptly—many of them exposing valuable fabrics and delicate textures to the damaging effects of the storm—filling every nook and corner of the spacious tent with the useful and beautiful articles of merchandise in great variety. Not only the farmers of our own county but residents of this city and of the borough of Chambersburg exhibited fruits and vegetables in almost endless variety, and while we can but give any of these a passing glance we should not neglect to mention the magnificent display exhibited by our city florists, which fully equaled if not excelled in design and in the artistic taste and skill displayed in their arrangement anything of the kind ever exhibited at a State or county exhibition in this part of the country, and any one who could gaze on the "Gates Ajar" unmoved or untouched by their surpassing loveliness and suggestive glory must indeed have a heart as hard as the "nether millstone."

With all this great variety on the grounds it was apparent at the close of the first day that the fair was a decided success in all those features which constitute an interesting and attractive agricultural and industrial exposition, and our sincere thanks are due not only to our brother farmers and their wives and daughters but also to the merchants, manufacturers and others, including the press of our city, who, through their influence, contributed so largely towards its success.

That our experiment proved a success is conceded by all, and that it should be repeated again this year seems to be the universal desire of those who were in any manner identified with it.

We were not present at the meeting of the board held on the nineteenth day of last month but learn from the published proceedings that among the other progressive movements of that meeting, initiatory steps were taken with a view to the permanent establishment of an agricultural, horticultural and industrial exposition, at or near this city.

This is a step in the right direction, which, if carried into effect, will supply a long-felt want in this portion of the State, stimulating competition in agricultural pursuits, furnishing an advertising medium for our merchants and manufacturers, and a healthful and restful recreation and amusement for that class of our citizens who most need a respite from their monotonous and exhausting labors.

Agricultural societies were originally organized and annual fairs held for the purpose of more effectually diffusing information among the agricultural classes by introducing and trying the merits of new implements and machinery and to bring into notice new and improved breeds of domestic animals, varieties of seeds, farm products, etc., and now, as this Board is deliberating with the view of establishing a permanent location and holding an annual exhibition, it is to our interest to inquire whether similar societies throughout the country and exhibitions held by them have fulfilled the expectations of their founders and have conferred the benefits and advantages upon the farmers which were promised at the outset and which was the ostensible motive for their organization.

Beginning right is a strong point gained, and this is especially true of any enterprise requiring years for its successful develop-

ment, and in this important step we may learn a useful lesson from the experience of those who have been engaged for years in conducting these enterprises.

It is usual in reporting experiences to give pictures of the bright side only, to report the successes and keep silent as to the failures, while if the failures and the mistakes leading to them were faithfully reported they would often teach by far the most instructive lessons. They are the beacon lights on an unknown coast, warning us to beware of the rocks and shoals upon which others have been stranded.

Thousands of thoughtful, intelligent farmers all over the country who were once actively engaged in conducting these enterprises as stockholders and directors have withdrawn their support and patronage and are of the opinion that agricultural fairs, as such, have fallen from their first estate and are annually drifting farther and farther from the objects and purposes for which they were originally instituted, and that their opinions are correct is apparent to any observant farmer who is at all familiar with the policy which controls many of our so-called agricultural fairs. He will almost invariably find them controlled by a policy which seriously impairs, if not totally defeats, the objects and interests which they were ostensibly destined to promote and advance, and which should still be the only motive for their existence, namely, to confer the greatest possible benefits on the agricultural classes.

That there are some notable exceptions is very true, and it is also true that there are perhaps as many of these exceptions to be found within the bounds of our own honored State as anywhere in the country.

There is no one to blame for the degeneracy of our agricultural fairs but the farmers themselves. Instead of jealously guarding and defending their own organization—their own offspring as it were—they have in many instances neglected or cruelly deserted it, suffering it to fall into the hands of a ring or clique, who seem to have but one idea, and that is to run a would-be or should-be farmers' organization in the interest of a few men of fast horse notoriety who are often strangers from our large cities and not in any manner identified with the farmers' interests.

Large premiums are offered to induce owners of celebrated

horses from a considerable distance to give trials of speed, presumably with the object of attracting a crowd, and we do not propose to censure them for this, provided they can afford to offer correspondingly large premiums to the farmers of the county or vicinity for the time and trouble of making their exhibit. But the difficulty lies in the fact that the farmers contribute a large proportion of the funds collected through entrance and admission fees, and are expected to appear promptly on the ground with their grain, fruits, vegetables, blooded stock and improved farm implements, and receive the merest pittance for their trouble, while hundreds, if not thousands, of dollars are paid over to—whom shall I say—the owners of the fastest horses in the country? By no means. It is tossed into the pool—which is a more genteel name for puddle, by the way—and is fished out by those whose garments have been the most frequently soiled by contact with them.

Is it surprising, then, that thousands of our brother farmers all over the country have become disgusted with this condition of things and withdrawn their patronage?

They do not so much object to a small compensation for the trouble of exhibiting their stock and farm products, but they do most decidedly protest against the prevailing custom of discriminating in favor of a class who care nothing for the farmer or the farmer's interest.

We do not wish to be misunderstood in this connection. Farmers above all other classes love fine horses and love and witness their graceful movements and their trials of speed and endurance, and at the risk of being accused of moral obtuseness we put ourselves on the record as favorable to friendly and honorable competition in trials of speed, as well as in the other departments which legitimately belong to an agricultural fair. We cannot see anything demoralizing or disgraceful in such exhibitions, provided they are divested of all fraud and trickery. But when they are dishonestly conducted, and become the center of gravity, attracting all the gamblers and rowdies within a radius of twenty miles, with the attendant evils of drunkenness, profanity and vulgarity, they do become demoralizing and disgraceful in the extreme, and should not be countenanced or patronized by any who claim to be law-abiding citizens.

An agricultural fair can doubtless be made a grand success in this county by offering such inducements to the farmers and horsemen of our vicinity as will influence them to put their shoulders to the wheel and assist in so forming our society and so guarding and protecting it from the evils and abuses alluded to, that reformation will never be necessary, but that it may be made a lasting benefit to the farmers and the pride of all the good citizens of our county.

One of the most pleasing and gratifying features in connection with our fair last Fall was the sound and healthful moral tone with which it was characterized, and the very noticeable absence of the drunkenness and rowdyism which is too often witnessed at our agricultural fairs, and which causes them to be a fearful nuisance in the communities where they are held, and the shame and disgrace of the agricultural classes, who so proudly boast of being the conservators of the public morals.

In organizing then let it be understood that we intend to "keep the rascals out," and that a sufficient police force will be employed to promptly arrest every drunkard and disorderly person the moment they step inside the gates. This was our policy last Fall and such was the policy of the Centennial Exposition, and who does not recall with pleasure the sense of perfect security they experienced while there, even although among hundreds of thousands of entire strangers. And, in closing this topic, we would cordially invite all order-loving, law-abiding citizens of our city and county to co-operate with us in establishing an exhibition which shall be an honor and a credit to the community, and one that shall be a popular and attractive place of interest and amusement, to which they may resort without fear of harm or insult.

A fair organized on such a basis and enjoying the confidence and moral support of all the best citizens of city and country could not fail to be an unbounded success.

In an undertaking of this nature we should first have the co-operation of all the farmers of the county, and we cannot hope to reach the highest success as a county organization without good, live, local organizations in every township, and if farmers would take the time to investigate the benefits and advantages derived from such organization and co-operation, they would not hesitate

to avail themselves of them and organize a club or grange for their mutual protection and advancement.

Other industries and professions have not been slow in discovering its advantages, and have organized their unions and associations for the promotion of their mutual interests, and the benefits resulting to each class through these combinations are apparent to all close and candid observers.

Through their boards of trade and other organizations the merchants and manufacturers are enabled to so regulate the channels of trade, and adjust the laws of supply and demand, that they can manufacture and sell at a fair profit, and we might enumerate, if time would permit, the various industries which are to-day enjoying the benefits of mutual protection, such as iron, steel, coal, petroleum and other combinations, as well as every class of mechanics and artisans, and although the farmers are equal in numbers to all the others combined, they are so scattered and isolated and many of them are so prejudiced against all organizations that it is very difficult to bring them together, and influence them to work together in harmony. If all the agriculturists of our country could be organized and united in the bonds of a common brotherhood for the promotion and protection of their mutual interests, they would be in a position to carry out effectively the principles of co-operation by which they would not only reap vast benefits themselves, but would make their influence felt in the elevation of society, the preservation of our free institutions, and all those social and moral virtues so dear to us as American citizens.

It is universally conceded that the fate of our liberties and the hope of our enlightened Christian civilization are reposed in the strong conservatism and unswerving integrity of the population of our rural districts as opposed to the great mass of heterogeneous elements composing our great cities, many of whom, like the multitudes of Ninevah, "know not their right hand from their left," and consequently cannot understand the nature of our institutions and do not appreciate their advantages.

One of the greatest dangers to which this country is exposed at the present time is the rapid increase of these great centers of population with their attendant evils of ignorance, vice and crime, and it is to counteract this influence and purify this foul

stream that the farmers of our country should organize and stand shoulder to shoulder as a tower of strength and a bulwark of safety and defense for our cherished institutions.

In order to get concerted action it is necessary that they should be brought into close and intimate relations with each other as a body, not to oppose or to antagonize any other legitimate branch of trade or industry, but to hold their own in the great struggle and strive with them to reach a higher place of honor and usefulness.

The organization known as "Patrons of Industry" has achieved wonders in the accomplishment of this grand object, and affords superior advantages for carrying out the principles of co-operation among the agriculturists of our country, and if its doctrines and teachings were more fully understood they would not fail to be appreciated, not only by farmers, but by all thoughtful, intelligent people.

Being a social, moral and educational institution it recommends itself to all classes who love good society and sound morals, and who are willing to use their influence to diffuse general intelligence, prosperity and happiness. Its declaration of purpose has always been made public, and whenever it has been given an intelligent and impartial investigation the verdict has invariably been in its favor.

One of the principal reasons why many of our good, substantial farmers—some of whom are with us to-day—have stood aloof from the organization and refused to identify themselves with it is in consequence of an old-established prejudice existing against all societies which have any flavor of secrecy; but as one who has long been a member both of Grange and Farmers' Club, and who understands and appreciates the respective merits of each, let me assure you that the former offers far superior advantages as a farmers' organization; that its secrets are a bond of union, reasonable, natural and proper, impairing no previous obligation, civil, religious or political, and I will go farther and say that its ritual is the embodiment of the moral law, and that no man can exemplify its doctrines and teachings in his daily life without being a good neighbor and a peaceful, quiet, orderly citizen.

We have thus briefly alluded to this organization as offering

superior advantages for effective co-operation, and for the purpose of impressing upon your minds the importance of organizing strong local societies in every community, not only a dozen or so, but all the farmers of your localities, and let one of your first movements be to purchase a large library, on agricultural, horticultural and other topics which are of importance to farmers, for the free use of your members, and now and then employ good lecturers from among the professors of agriculture, chemistry, entomology, &c., to illustrate and explain what you do not understand, thus making your organization so instructive and interesting that the enterprising farmers of your localities will feel that they cannot afford to deprive themselves of its advantages. It is our good fortune, my brother farmers, to live in the most enlightened and progressive age of the world's history, and we should bear in mind that this fact not only furnishes us with greatly enlarged facilities for usefulness to our fellow men, but at the same time brings with it increased duties and responsibilities, and the obligation forces itself upon us with great positiveness that if we would have this, the greatest and most useful of the world's industries, maintain the position to which it is entitled by priority of origin and the vast superiority of its interests, then we must awake to a more intelligent comprehension of our important relations to society, as viewed from a moral, intellectual, political and financial standpoint.

Either of these would furnish a theme for a volume, and it would be impossible to enter into a discussion of them within the scope of our short address. At best we can but throw out some suggestions, or set before you, as it were, some crumbs of thought or fragments for your intellects to grasp and digest at your leisure. We are fully aware that we are addressing a body of men who think while they work, and study while at leisure, and who are alive to the importance of these great questions, but to influence the representatives of our great industry all over our broad land to think and work together as a unit would be one of the grandest achievements of the nineteenth century.

While we meet together from time to time to discuss the topics relating to the successful rearing of stock and cultivation of crops let us pause and consider whether these interests are all we have in common, and let us not omit or neglect the "weightier mat-

ters," such as the discussion of the educational, political and financial problems which so vitally affect us, that we may be fitted to perform our part in the great drama of the world's progress more intelligently.

He who "runs may read" that the tendency of this progressive age is to build up and foster other great industries and monopolies at the expense of agriculture. In other words, there are entirely too many axes ground at the farmer's expense, and we must as a class call into exercise all our best energies to counteract this influence and see to it that our industry is not crippled by unwise and discriminating legislation, but that the farmers' interests are fostered and protected.

We cannot as a class afford to be so engrossed with the cares and burdens of farm life that we are compelled to shift these weightier responsibilities on the shoulders of other professions who cannot be expected to over-exert themselves in looking after the farmers' interests.

History abundantly proves that where agriculture has been fostered, that nation has reached the highest degree of prosperity and civilization, but when crippled, neglected and suffered to decline, the course has been toward degeneracy, and it is our prerogative to profit by these admonitions and warnings of history, and to remember that if we would have our industry protected and fostered we must keep eternal vigilance and watch with eagle eye the conduct and movements of those whom our suffrages have elevated to positions of trust and power, keeping our hand ever upon the brake and not hesitating to apply it promptly and vigorously whenever we find that the tendency is towards extravagance and corruption, rather than their retrenchment and reform.

We feel that we owe an apology for having trespassed so long upon your valuable time; our object has been to awaken a desire among our farmers for more thorough organization, that our feeble granges and farmers' clubs may be encouraged and strengthened, and that new organizations may spring up in the hitherto neglected portion of our county.

Many of our substantial farmers have not as yet availed themselves of such privileges and have not manifested any interest in our county society, and many of them will not until the force of

these suggestions is brought to their notice through the discussion and ventilation of them first in their local societies.

In conclusion, I would say that it is true of all professions and industries that they are what their votaries make them, and let us see to it that we honor our calling if we would have it honored.

In the beginning our Creator made it honorable by instituting and placing his seal upon it, and this position has been maintained by the long list of illustrious men of ancient and modern times who have considered it an honor and credit to be numbered among the tillers of the soil, and many of the greatest names known in the history of our own country have been those who were practical farmers and who loved agriculture for its own sake—thus it has come down to us and thus it may be handed down to our descendants, its honor and reputation not only unblemished and untarnished, but shining with additional lustre and brilliancy by having been faithfully and carefully nourished and sustained by the farmers of this generation.

Let us then seek by every means in our power, not only to elevate our calling and make it more noble and honorable, but at the same time so remunerative and profitable that its followers may, in addition to the necessities and comforts of life, secure a due proportion of its enjoyments and luxuries, in common with those of other pursuits, that they may educate their children and fit them for positions of honor and usefulness in society, and at the same time surround themselves with the comforts and pleasures of a beautiful home, where they may spend their declining years in ease and retirement.

If all this can be accomplished by the intelligent, thrifty cultivators of the soil, then we can honestly and conscientiously recommend agriculture as one of the most independent and desirable employments and pursuits of man.

Dated, Trenton, N. J., February 23d, 1886.

In the afternoon of this meeting our members were treated to an address by Eli Minch, Esq., on "Essentials to Plant Life—Source of, and how to Supply Artificially." No extract of this address, if given, would do justice to it or benefit the reader. The address is printed in full and is on file. We consider it a valuable addition to our proceedings. It is complete.

The By-Laws of the Board, revised and improved, were adopted at this meeting. Should other County Boards desire a copy for examination it will be furnished.

A special meeting of the Board was held March 13th, at which the Mercer County Agricultural Fair Association was organized.

From the proceedings of the June meeting one page is here given:

The topic, "The proper way to seed ground to grass, not seeding to Winter grain, in order to mow the next season," was taken up and discussed. A. D. Anderson ploughed once, applied two hundred pounds Smith's Fertilizer per acre; grass looking as well as any, one field extra nice; cut two tons of hay per acre. Seeded last week in August.

William Hough.—The first crop of hay from Fall-seeding, of timothy, will not yield as heavy as the succeeding ones. William S. Riggs reported favorable results both in clover and timothy from August seeding.

J. F. Phillips has prepared land in August, sown to grass, and had good results the next year; recommends a light dressing of lime. Quantity of seed per acre—clover, five quarts; timothy, seven to eight, for meadow. To renovate an old up-land sod, spread compost on; to restart the grass, thinks this is better than phosphates, as sod, in his judgment, requires vegetable matter.

To subdue Canada thistle. Mr. Ege had a field covered with it which he manured heavily and sowed late in Fall with grass seed, and in three years' time the thistles were choked out; recommends cutting off the thistles close to the ground as they appear above it as a means to aid in subduing them. The implement for this purpose resembles a large chisel. Other remedies for their destruction were sulphuric acid, also kerosene oil.

At this meeting an address on "The Feeding Stuff in General Use in N. J.," was delivered with his usual clearness, precision and instructiveness by Dr. George H. Cook.

The August meeting is devoted, in part, to crop reports; giving present condition, actual and prospective yield, blight, and anything of interest affecting young crops. These reports are extended and corrected at the November meeting. One topic considered at this meeting—"Why will the same amount of

stable manure applied in Winter produce a larger crop than the same amount applied at ploughing time?"—was discussed at length. That it would do so was conceded by most members present, but why was it so could not be so definitely answered. One member stated he had heard the theory advanced that "the ground being covered during the high winds and cold weather of Winter was kept moist and was better enabled to draw from the atmosphere certain ingredients helpful to plant life in far greater quantities than it would if left exposed to wind and weather."

An address on "Food Adulteration," by Dr. William K. Newton, was given at this meeting. The doctor did not attempt to show that this is an adulterous age, but he did prove most conclusively that it is an age of adulterations.

The November meeting was made especially interesting by addresses on "The Great West," delivered by Messrs. Franklin DeCou and Ralph Ege. The first speaker, after giving a panoramic and most interesting description of the country traversed by our great lines of railroad, devoted most of his remarks to Minnesota and her resources. The latter speaker drew a glowing picture of Nebraska, her area, soil, productions, people, towns and business facilities. B. Satterthwaite followed with remarks based on recent travel and observation in some of the Western States, concluding that a farmer with limited means will do as well East as he would should he remove West. Throughout the county there has been a falling off in the clover yield for several years past. The subject has been discussed by the Board and a solution of the difficulty sought. Opinions differ both as to the cause and the cure of the trouble. One member believed the failure entirely due to late sowing; he stated it was the custom when he was young to sow clover seed the last of February. While the snow was still on the ground by sowing thus early, the alternate freezing and thawing of the ground before vegetation begins, lets the seed down to sufficient depth to stand both dry weather and winter. He has practiced early sowing and the clover does not fail. It is considered of sufficient importance to receive attention at the meeting of the State Board. Clover hay is shown to be the nearest a complete food of any other crop produced on the farm; and as a soiling crop it is unsurpassed. It is in every way helpful on the farm. Has the con-

tinuous application of commercial fertilizers anything to do with the failure of this crop?

The "Hatch Bill" was considered at the November meeting and a resolution favoring its passage was sent to our Congressman, Buchanan.

It gives us pleasure to state that the Secretary of the State Board of Agriculture has been present at some of our meetings, and has aided us in advancing the interest we seek by his presence and helpful words.

The Mercer County Fair Association, to which reference has been made, leased a large piece of land lying along the city line of Chambersburg, fenced it in, and held, in October, a large and varied exhibition—a credit, certainly, to all who were engaged in it. Not being able to secure suitable grounds at an earlier date, the directors had not time to work up a wide-spread interest in the movement this year. As there seems to be a general public interest in the success of the undertaking, the association feel justified and encouraged in going forward in their efforts to make this fair, so centrally located, a success.

In the early part of the month of May a very general blight was apparent in our young peach trees. The vigorous new wood forming and extending would wilt and die. Upon examination a small, dark-colored web worm, or moth, from one-fourth to one-half inch in length was found at work in the pith of the new wood; beginning at the extreme end of the terminal branches, among the young leaves, it would throw a slight web around itself and then eat its way through the new wood down to last year's growth. Of course the wood through which it had eaten died, and these leading branches put out side shoots, seriously injuring the beauty and future productiveness of the trees thus injured. The operations as described, and specimens, both of the injured branches and of the moth, were sent to Prof. Riley, of the Agricultural Department at Washington, and the following reply was received:

U. S. DEPARTMENT OF AGRICULTURE, }
 Division of Entomology, }
 WASHINGTON, D. C., May 18th, 188 }

*Franklin Dye, Treasurer New Jersey State Board of Agriculture,
 Trenton, N. J.*

DEAR SIR:—In the absence of Prof. Riley, I beg to acknowledge

the receipt of yours of the 17th inst., and of the accompanying specimens. The insect of which you complain is the larva of the so called "Peach Twig Moth" (*Anarsia lineatella*). It has been treated by Glover in the Annual Report of the Commissioner of Agriculture for 1872, page 112, figure 1; by Comstock in the Proc. West, N. Y. Hort. Soc., 1878, page 13; also in the report of the Commissioner of Agriculture for 1879, page 225; and by Lintner in the 1st Annual Report of the State Entomologist of N. Y., 1882, pages 151 to 156. You have described very well the work of the first brood of larvæ in the terminal branches of the peach. In the latitude of Washington there is a second brood later in the season, which feeds on the fruit, causing it to fall to the ground and rot. It is found not only in the peach, but also in the twigs of plum and apple and has also been known to injure the strawberry by boring into the crown. It is quite subject to attacks of a Hymenopterous parasite which will possibly prevent it from being very injurious two years in succession. The most effectual means of arresting the increase will be the cutting off and burning the infested terminal twigs. This should be done at this time of the year, if not earlier. No other remedy has been proposed, and it is difficult to see how anything more effectual can be used. The larvæ on reaching maturity leave the burrows in the twigs and seek some sheltered place beneath the loose bark of the trees or under the surface of the ground near the base of the tree in which to transform, so the work of clipping the infested twigs must be done early and before they leave.

Yours respectfully,

L. O. HOWARD,

Assistant in charge.

In November a communication from the U. S. Commissioner of Agriculture, the Hon. Norman J. Coleman, requesting certain information concerning the potato yield, extent of rot, and causes of, was received. In sending reply to this letter, the desirableness of having our State and County Boards of Agriculture brought into harmonious action with the National Department of Agriculture, and the possibility of making the former the channel through which crop reports might be regularly forwarded to the latter, was suggested. The reply of the Statistician is considered of general interest, and is herewith submitted :

STATE BOARD OF AGRICULTURE.

DEPARTMENT OF AGRICULTURE, }
WASHINGTON, D. C., Nov. 19th, 1886. }

SIR :—Your communication of the 2d inst. has been received and referred to the Statistician of the department, whose report on the same is herewith enclosed.

Very respectfully,

NORMAN J. COLEMAN,
Commissioner of Agriculture.

To F. Dye, Trenton, N. J.

Inclosure :—Report of Statistician.

U. S. DEPARTMENT OF AGRICULTURE, }
WASHINGTON, D. C., Nov. 19th, 1886. }

SIR :—The suggestion of Franklin Dye, Treasurer of the New Jersey Board of Agriculture, referred for consideration, has been hinted at before. It is very desirable that County Boards and local societies should communicate and co-operate with this department, giving desirable information and tests of seeds and plants, and receiving results of its investigations, experiments and counsel. But the intimation that these societies might perhaps take the place of the crop correspondents is clearly impracticable. Aside from the long experience in the work, they are selected as the most intelligent and efficient for such work, from the entire community. It will not do to limit the selection to officers or members of granges, of agricultural boards or societies; correspondents must not only represent the people, but each should be the best man in his county for the service, without regard to anything whatever beyond a peculiar fitness for the work.

It would be very desirable to have reports of the condition and work of these societies, the status and wants of agriculture in their jurisdictions, and these reports might be utilized in the annual or special reports of this department. This would be far more practicable than crop reporting, and would increase the scope and usefulness of the Division of Statistics of this department.

Respectfully,

J. R. DODGE,
Statistician.

HON. NORMAN J. COLEMAN,
Commissioner.

The different organizations in the county, whose members compose, also, the County Board, are still in operation, and some

of them are doing efficient service to the agricultural and horticultural interests. Where farmers are organized and hold their meetings regularly, intelligence is disseminated, a unity of interest is developed, and harmony of action in securing information, exposing fraud and punishing imposters is secured.

EWING TOWNSHIP.

Reported by James A. Hendrickson, Ewingville P. O.

Membership of Grange, thirty-five. Leading crops, wheat, hay, oats and corn, with a fair supply of market-garden produce. Most successful crops, the first named above.

Unsuccessful ones were those planted late and poorly manured.

Improvements in farming consist in heavier manuring, thorough cultivation, and harvesting entirely by machinery.

The forage are corn and rye.

The public roads are made of mud, to the satisfaction of the most ardent admirer. A few exceptions to the above are macadamized with stone and gravel.

Fifty per cent. of the farms are rented. (?)

Few horses are raised. The Alderney and Holstein are the leading breeds of cattle. Swine grown only in limited numbers. Poultry keeping is on the increase, and, while other stock has been free from disease, one-third of the poultry has been carried off with the cholera, and no remedy found.

There seems to be farm help enough of its kind, but the kind is poor. Help usually board with employer. Prices as last year.

Sparrows are becoming a great nuisance and no effort has been made to destroy them.

Topic for discussion—Are agriculturalists, generally, advancing or receding in their financial and educational qualifications, and do they receive their full share of aid according to the utility of their occupation, from both State and National authorities?

HOPEWELL TOWNSHIP—SOUTH.

Reported by S. B. Ketcham, Pennington P. O.

The Grange located in Pennington is in active operation. Leading crops, wheat, oats, hay, potatoes and apples. Most successful, wheat, oats and hay. Wheat above ordinary ; corn below,

owing to the wet, late spring. Public roads maintained by road tax and worked by district overseers. Four-fifths of the farms are believed to be worked by their owners. The usual farm stock is raised. A sufficiency of farm help is available; boarded by employer generally; price as last year. No effort has been made to exterminate the English sparrow.

HOPEWELL TOWNSHIP—NORTH.

Reported by J. M. Dalrymple, Hopewell P. O.

The farmers' organizations are Hopewell Farmers' Club and the Mercer Grange, each numbering twenty-three members.

Leading crops, corn, wheat, oats, hay, potatoes and fruit. Corn injured by cold, late Spring and dry Summer.

Binder is coming into general use in cutting grain.

Soiling crops are corn and Hungarian grass. Roads are bad. Eighty per cent. of farms are worked by owners, who have enough help; prices as last year, and usually board their men. No effort has been made to exterminate the English sparrow. Poultry has suffered from cholera and croup. Farm animals have been exempt from contagious diseases.

At a meeting of Hopewell Farmers' Club the following was the crop report for the past year: Hay, 100; corn, 70; wheat, 110; oats, 115; potatoes, 65; small acreage apples, 75, inferior in quality; pears, 110; peaches, 85, size small, quality fine; grapes, 50, Salem, Lady and Washington mildew for the first time in this locality; strawberries, raspberries and blackberries, 100.

J. M. Dalrymple made the following report:

Field Experiments with Fertilizers on Clover.

Fertilizers.	Weight per acre.	Cost per acre.	Pounds per acre.
1. Nothing .....	.....	.....	2,850
2. Nitrate soda	150	\$4 50	3,750
3. Super-phosphate	350	5 25	3,900
4. Muriate of potash	150	8 88	4,650
5. (Nitrate of soda	150)	9 75	5 350
{ Super-phosphate	350)		
6. Nothing .....	.....	.....	3,250
7. (Nitrate soda	150)	7 88	5 350
{ Muriate potash	150)		
8. (Super-phosphate	350)	8 63	5,350
{ Muriate potash	150)		

Fertilizers.	Weight per acre.	Cost per acre.	Pounds per acre.
(Nitrate soda.....)	150}		
9. - Super-phosphate.....	350}	13 13	6,250
(Muriate potash.....)	150}		
10. Plaster.....	400	1 50	2,900
11. Fine barnyard manure.....	20 loads.	80 00	5,050

Red clover was sown on these experiment lots in April, 1885.
The fertilizer was applied May 3rd, 1886.

The season throughout was favorable for clover.

Soil, situation and drainage—red shale, high, gently sloping to south.

Texture and character of surface soil—loose.

Character of sub-soil—shale.

Soil is best suited for corn, wheat, oats and potatoes.

As to condition, previous cropping, tillage, etc. : In 1884 a fair crop of corn was grown ; in 1885 a crop of wheat.

The peach crop is probably the largest ever grown in Hopewell township. The following shipments are reported from the different railroad stations in the township :

Hopewell station.....	55,590 baskets.
Moore's station.....	847 baskets.
Pennington station.....	7,892 baskets.
Titusville station.....	23,791 baskets.
Aggregating.....	86,120 baskets.

In addition to the above shipments, it is estimated that fully 5,000 baskets were consumed in the local markets (city of Trenton and other smaller towns).

Mr. Farley Phillips reports a peach crop of three thousand baskets from two thousand five hundred trees ; net proceeds sixty cents per basket, which he thinks a paying crop. Mr. Leavitt Brewer, a crop of three thousand baskets ; net return, thirty-one cents per basket.

Mr. Nathaniel Phillips had a large crop and is said to have received satisfactory returns.

On the whole, the peach crop has not paid so well as formerly, on account of low prices. Where trees were heavily loaded with fruit, it came small and hardly paid expenses of shipping.

Messrs. Blackwell Brothers, of Titusville, N. J., shipped to New York and Philadelphia from Washington Crossing Station,

two hundred and sixty-three barrels pears and three hundred and fourteen barrels apples ; average price sold for, net, fifty-five cents per barrel, making the crop only about pay expenses of gathering. They also shipped to Philadelphia one hundred and seventy barrels cider, not all the product of their orchards, valued at about \$500.

Early apples and pears were extremely low early in the season, and the dry weather ruined the late fruit. We have report of shipment of nine hundred and seventy bushels of apples, loose in car, from Titusville station, which brought thirty cents per bushel net. In addition to this, we have reports from same station of one hundred and seventy-nine barrels apples, nine barrels pears, two hundred and ninety-two baskets pears, two barrels plums, one barrel quinces and three baskets grapes.

The Hopewell Farmers' Club is now arranging to establish at Hopewell a voluntary weather service office. This being an agricultural district, the farmers believe it will be to their advantage to have a record kept of the rainfall, temperature, etc., which, in the course of years, must be valuable to to them in the study and adaptation of cereals.

PRINCETON TOWNSHIP.

Reported by H. E. Hale, Princeton P. O.

The Princeton Agricultural Association, though not large in numbers, has an efficient and active membership—its meetings are maintained. Leading crops, corn, wheat, oats and hay, the latter the most successful—an extraordinary yield of five and one-half tons of timothy and clover hay per acre is reported.

Corn has fallen below a full crop, owing to cold early, and dry late in the season. Improvements in farming are the corn-planter and steam thresher. Corn is the forage crop. Public roads are in fair condition, made chiefly of gravel and are worked by one township supervisor.

Twenty per cent. of farms are rented. The usual farm stock is raised—no disease is reported. Supply of farm help moderate ; pay as last year, and usually board with employer. Subject for discussion at State Board, "Irrigation."

LAWRENCE.

Reported by F. Dye, Trenton P. O.

Lawrence Grange still maintains its organization. The old, staple crops, wheat, corn, hay and oats, maintain their supremacy. There are, however, more market-garden crops grown than formerly; more cabbage is raised. J. F. Phillips leads in this, as in all other crops in the township, setting out the past season one hundred thousand plants. This crop was seriously affected throughout the township by dry weather at heading time. Corn shortened by late wet spring and drought at earing time. Potato seed rotted quite extensively soon after planting, owing to extremely wet and cold weather, and rotted somewhat in fall. Hay ten per cent. above last year, but owing to dry weather in fall, shortening pasture, the surplus over last year's yield will be consumed on the farms. Wheat a good yield at a low price. Fruit not a full yield nor perfect. Late varieties injured in early summer by curculio or blight, keeping poorly. Chief forage crop, corn. No silos in the township. Roads worked by district overseers, and are not always in a civilized condition—that is, the roads, not the overseers.

About twenty per cent. of farms are put out, rented or worked for a portion of the crop yield. Farm help would be sufficient, perhaps, if it would stay, but they are becoming more migratory each year. Wages about as last year and board with employer. The usual farm stock is raised and no disease is reported except chicken cholera. The English sparrow goes on increasing unmolested.

Subject for discussion—The grasses of New Jersey—their comparative value—how to grow them most successfully—causes of failure?

HAMILTON TOWNSHIP.

Reported by D. C. McGalliard, Trenton P. O.

Hamilton Grange, numbering 45, and the Hamilton Township Agricultural Association, numbering 150 members, are both in a flourishing condition. Leading crops, corn, wheat, rye, oats, hay, potatoes, apples and berries. Those doing best were corn, rye, hay, apples, pears and berries. Corn is the forage crop. The

roads are generally good ; mostly sandy, in some localities have been gravelled. Maintained by appropriations from the township taxes, and are divided into districts, with an overseer to each district. Twenty per cent. of farms are rented. Farm stock grown to a limited extent. There is no epidemic form of disease. Help not sufficient. Pay same as last year. Board with employer, except those engaged in picking small fruit—this is generally piece-work at a stated price per quart or basket. No systematic effort has been made to exterminate the English sparrow. Forty-two persons each request a copy of next annual report.

The following topics are suggested for discussion—"Which would be the most profit to farmers at the present prices of grain, to hire more help, buy fertilizers and raise more grain, or raise less grain and seed down to grass?" Also, "What is the cause and preventive or cure of the rust affecting blackberry bushes—affecting the Dorchester and the Kittatinny the most?"

WEST WINDSOR TOWNSHIP.

Reported by Thomas D. Brokaw, Dutch Neck P. O.

There is no farmers' organization in the township. Leading crops, wheat, rye, corn, oats, potatoes and hay, all of which were good. Had an usually large yield of wheat straw. No improvement made in manner of farming or gathering crops. Public roads good ; very much improved in last few years ; maintained by taxation. One-tenth of farms are rented. Few horses, cattle or sheep are raised—swine and poultry more extensively. Farm help rather scarce ; price as last year ; generally board with employer.

Washington township has no farmers' organization. No report is given.

EAST WINDSOR TOWNSHIP.

Reported by Wm. S. Riggs, Hightstown P. O.

The leading crops are corn, wheat, rye, oats and hay. The four last named were extra good. Corn did not mature well, owing to drought. Potatoes came up poorly. Forage crops are corn and grass. Roads are made with good dirt and worked with patent scrapers.

Seventy-five per cent of the farms are worked by their owners. The general farm stock is raised to a limited extent only. The hog cholera has been quite severe just over our township line in Cranbury township—cholera also with turkeys. Help is scarce and wages higher than last year, when considered in relation to the present price of farm produce. The English sparrow is unmolested.

Would suggest as a topic for consideration at annual meeting :
“ Cause of High Wages.”

Our local meetings are shamefully neglected.

It will be seen from the foregoing crop reports that the time-honored crops still lead, notwithstanding they are grown in and shipped here from the West in such enormous quantities. Small fruits, poultry and eggs, and dairying for the milk-product are, of necessity, receiving more attention, however. The growing of wheat, as a paying crop, seems to have passed permanently away from us. For its straw and the better fitting of the land for the succeeding grass crops it is a necessity still, and will continue to be grown. Oats are a paying crop, when the straw will bring ten dollars per ton at our potteries. This is an argument in favor of protection to home manufactories as benefitting farmers. Another and stronger argument is, all the operatives and employees in our manufactories are consumers of farm produce, and are non-producers of the same. The plain inference from which is, the more we increase our manufacturing industries the more operatives will be needed, and the more operatives, other things being equal, the higher will the price of farm produce become ; also the more manufactured goods there are made and put on the market the cheaper will these goods become to all needing them, to the farmers as well as others. This latter point so emphasized in the ears of farmers by the advocates of free-trade will be more fully realized by protection, without sacrificing the advantages of the large home market for farm produce afforded by thriving home manufactories. And it is within the experience of every observing business man of years that, when farm products bring a good price every other industry is in a flourishing condition.

The potato crop has been shortened about twenty-five per cent. in the county, owing to damaging causes already stated.

Corn, also, has been below a good year in about the same ratio. Wheat above an average crop, straw very heavy, down badly. Hay, the county over, above a good year; the excess over an average crop will be required on the farm, as the dry weather in fall made early foddering necessary.

The very dry weather after harvest caused many farmers to put off any attempt at ploughing for fall-seeding in the hope of timely rain. As the rain did not come until long after seeding ought to have been done, the prospect is not at all flattering for a bountiful wheat harvest next year on some farms. It is better, usually, to sharpen the plow at ploughing time and go ahead, though the ground may be dry; you will then be ready when sowing time comes, and there is more hope for a good yield when the ground is broken up dry than when it is very wet. Rye is grown more in the county than it was for a few years back. Time was when our eastern farmers fattened for market cattle enough to supply the (then) home demand, and it is a question whether our attention ought not be given to it again as a paying industry.

But little attention is given to sheep growing. As the sheep decrease, the dogs increase. One man who claims to be a dog trainer, but is more of a hunter, in answer to my question of how many dogs he had, replied he had only nine now, but had had fifteen most of the Summer. Our growing population, with two or more dogs to each family, and the low dog tax, makes sheep growing a very uncertain business. And though some townships aim to pay to farmers losses occasioned by dogs, no farmer wishes to go into the sheep business with the strong probability of having his beautiful flock torn and mutilated at any time, even though provision is made for approximated damages. Does our dog law require revision? Poultry growing for market promises well but for the ravages of chicken cholera. Will our veterinarians devise an effectual remedy for this disease? Next to the American eagle, the hog is America's pride. More hogs are raised in the United States than all the rest of the world. But this industry, too, is jeopardized by the swine plague, whatever it may be. Most farmers in the county endeavor to grow and fatten a surplus over those needed for home consumption. Considering the value of this animal, especially since he has become a butter producer, thorough and careful experiments and obser-

vations should be made by farmers as well as scientists, to determine, if possible, the cause and cure of this disease. There's millions in it by way of losses to the farmers. Some practical and seemingly wise suggestions on this point are to be found in the "National Stockman and Farmer" for December.

The help question, like the weather, lies close to the surface, and frequently, perhaps too often, is a subject of conversation between employers. It is not to be presumed that the employer is not discussed by his or her help. The question is a vital one in view of the labor agitation all over our land. It demands the serious consideration of farmers, and this to give the farm-laborer as good a chance to live and thrive as he would have should he leave the farm and seek other employment. It is seen by our township reports that most farmers board their men; whether this is best or not is an open question; it is discussed by our leading agricultural journals with a preponderance of argument in favor of hired men boarding themselves. There are many young, unmarried men who seek employment on the farm; a fixed rule on the part of the farmer not to board his help would generally throw these out of employment as farm hands, and this rule, if adhered to, might deprive the farmer of any help whatever, at times. This, like many other of the labor questions, can be better settled, usually, by the employer and employee. Possibly it might be of advantage to both farmers and men seeking farm work could there be a labor intelligence office established at the county seat of each county, to which both might apply in emergencies.

In breeding all kinds of farm stock in the county, the tendency is towards improvement. At the recent fair some as fine horses were exhibited as can be shown by any other section of the State. Among cattle, there are numerous herds of choice Jerseys and Holsteins; besides a generous admixture of these breeds crossed with our best native stock. Care is required in selecting for improvement, whether for stock, poultry, fruit, grain or vegetables; lest, after having expended time, money, thought and patience, we find our hopes no nearer realized than when we began.

There seems but little disposition manifested for the abolition of fences. Are they so much a necessity as their prevalence in-

dicates? This question is of sufficient importance to receive the earnest consideration of our Township, County and State Boards of Agriculture. The fencing material now in use "costs the farmers of the United States, according to Hon. William Walter Phelps, \$20,000,000 at the start, with five per cent. on this cost to keep them in repair, which makes another million dollars; and six per cent. on this cost to pay the interest. This is \$1,200,000. So that they cost us annually \$2,200,000." Another insight into the cost of fences is afforded by the capital invested and the giant monopolies formed for the manufacture of barbed and other kinds of wire fencing. It will cost our farmers less to soil their cattle, give them more land to work, and greatly increase the manure pile.

It will be seen that the large proportion of our farms are worked by their owners. This is a healthy indication. Notwithstanding this there is not that outward evidence of prosperity among our farmers the county over which is usually manifested in nicely painted houses, well-kept out-buildings and beautiful surroundings. There are things wanting in many farmers' homes, the absence of which betokens a time of depression. Farmers are willing to bear their full share of every right burden, but for some time past they have been doing more than this. Land is rated too high for taxation purposes. Ten thousand dollars invested in a mortgage or stock and realizing to its owner five per cent. net is worth more to him than one hundred acres of land rated at \$100 per acre and taxed accordingly is worth to its owner. It would seem, too, that taxes on real estate are levied, frequently, in such a way as to retard improvements. Who has not known cases where the farmer (and his family) after having, by hard work and close economy, saved at every possible point through a series of years to improve his land, buildings and surroundings, has had his land valuation raised just in proportion to the improvements made. While his neighbor, less industrious it may be, or indifferent to improvements, his land paid for, and because it is not in so high a state of cultivation as the other, forsooth, is rated much lower. If improvements are desirable they are worth encouraging, and this feature of taxation should be reversed or modified. And taxes in general should be most carefully adjusted, so as to fall in rightful proportion in each

case. But the remedy for this and some other existing evils is not to be found in croaking. Let farmers organize and discuss, candidly, all questions affecting their prosperity and the general good (the two are identical) and by united effort they can usually secure both. Great things have been already accomplished ; much more remains to be done.

MIDDLESEX COUNTY.

MIDDLESEX COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1887.

President.....	SAMUEL BLISH.....	New Brunswick.
Vice President.....	A. D. NEWELL, M. D.....	New Brunswick.
Secretary.....	J. M. WHITE.....	New Brunswick.
Treasurer.....	C. E. D. PHELPS.....	New Brunswick.

DIRECTORS.

CHAS. E. ELKINS.....	New Brunswick.
J. G. CORTELYOU.....	New Brunswick.
E. FARMER.....	New Brunswick.
GEO. H. COOK, LL. D.....	New Brunswick.
MATTHEW SUYDAM.....	New Brunswick.
GEO. W. DE VOE.....	Old Bridge.

DIRECTORS IN STATE BOARD.

D. C. LEWIS.....	Cranbury.
J. M. WHITE.....	New Brunswick.

REPORT BY J. M. WHITE.

During the year the society has held eleven meetings and one exhibition of farm products, but has not awakened as much interest among the farmers of the county as could be desired. None, with one or two exceptions, responded to the invitation of its secretary to assist in collecting fruit and material for reporting to your society, therefore this report cannot do entire justice to the agricultural interests of our county.

The past year as a whole has been favorable to the farmer and crops of most kinds have been good, although prices have not always been remunerative.

Corn, owing to unfavorable weather at some periods of its growth, did not give as good an average yield as in 1885, yet the

crop was fair, and perhaps above an average one. The acreage was about the same as years in general.

Oats were an unusually heavy crop, giving from forty to seventy-five bushels per acre, and some single acres probably gave more than the last named amount. Mr. James Neilson reports one thousand five hundred and sixty-four bushels from twenty-one acres, an average of seventy-four and a-half bushels per acre. One or two others report about the same average.

The season was most favorable for wheat and the yield was generally large. Mr. Neilson reports six hundred and fifteen bushels from fifteen acres, an average of forty-one bushels per acre. In a few instances forty-three to forty-seven bushels per acre are reported.

The fore part of the season was not favorable for potatoes, many fields coming up irregularly, and the early varieties in many instances were partial failures, yet as a whole the crop was an average one, with very moderate prices.

Late cabbage and turnips, owing to continued dry weather and aphids were a partial failure, giving no more than half a crop at best, though prices were higher than in the preceding year.

Apples were an abundant crop and of good quality, and on an average were sold at remunerative prices, and though at one time low, on Dec. 1st they commanded from \$1.50 to \$3.50 per barrel.

Pears have been abundant, but generally of inferior quality and sold at moderate prices.

Peaches are cultivated to a greater extent than for some years, but the past season gave only a partial crop.

Other fruits were plenty and of good quality.

Hay was an abundant crop, and of good quality, the yield per acre in some cases being as much as four and a-half tons. James Neilson reports two hundred and ten tons from seventy acres for the first crop.

G. W. DeVoe reports for the first crop on one field an average of four tons per acre. Prices for the hay crop are good considering the abundance in yield.

The rye crop was above the average, both in grade of straw and grain. The price of grain, however, was low and unremunerative.

Altogether we think there is a forward movement in agriculture in our county.

MONMOUTH COUNTY.

MONMOUTH COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1887.

President	JOHN H. DENISE.....	Freehold.
Vice-President.....	WILLIAM S. COMBS.....	Freehold.
Secretary.....	D. D. DENISE.....	Freehold.
Treasurer	JOHN B. CONOVER	Freehold.

DELEGATES TO STATE BOARD.

D. D. DENISE.....	Freehold.
WILLIAM S. COMBS.....	Freehold.

BOARD OF DIRECTORS.

JOSEPH T. FIELDS.....	Red Bank.
L. G. SCHANCK	Wickatunk.
L. DUBOIS.....	Manalapan.
D. A. VANDERVAN.....	Manalapan.
EDWARD HANSE.....	Freehold.

During the past year there have been but two meetings of the Board. At the first one, held in March, Prof. G. H. Cook was with us and have gave an interesting address. The farmers came out in goodly numbers. The second meeting was held in December, when the officers were elected. Dr. William K. Newton was present and gave an instructive talk.

SOCIETY AND CROP REPORT.

BY D. D. DENISE.

The progress of agriculture in Monmouth county for the year 1886 has been fully up to that of any previous year. An era of progress has stepped in with our farmers in the matter of improving farms and increasing their productiveness. Waste places are turned into public fields, the old fence was grubbed out, and

truly our land is being made "to blossom as the rose." The farmers are keeping themselves well posted in everything that pertains to their avocation, and supplying themselves with all the improved implements and are introducing all new varieties of seed that tend to increase the average yield. The subject of improving the lands is receiving considerable attention as it properly should in the way of using fertilizers of various kinds. With each succeeding year our county becomes more thickly settled.

Our manufactories increase in number and capacity. Our land receives higher cultivation, for our farmers are coming to know that is the only way to success. A drive through the county will show you at once that the farmers are progressive, as dwellings, barns, fences, &c., will attest. The fence question is an all-absorbing one, how to make the cheapest, strongest and most durable fence for the farm. Rail timber is getting scarce. Some use wire alone, others are planting hedge, and it is an undecided question which is the cheapest. Our principal roads are turnpikes and our average roads are in fair condition. The breeding of fine stock of all kinds has received a new impetus in the county and the farmers nearly all seem to realize the fact that it costs no more to raise good stock than it does scrubs, consequently fine poultry, hogs, cattle and horses may be found on every good farm. Sheep fill but a small part of the stock upon our farms in this county. The principal reason is the present State law fails to give proper protection to sheep growers, the sheep steadily decrease, while the dogs continue to multiply. This state of things will continue to grow worse unless we resort to the license system, and every dog that is not protected by having license paid be killed. All the necessary regulations to carry this measure into effect could be provided for by the Legislature, and I appeal to every farmer in the State of New Jersey to seriously consider the importance of sheep husbandry and the dangers which now threaten its destruction, and if possible place this great industry on an enduring and solid basis of prosperity. I trust that our legislative committee will give this their attention.

The raising of poultry has become quite an item in farm produce and is on the increase. The past year has been unusually healthy.

Mount J. Duncan raised six hens and one gobbler that weighed one hundred and forty-five pounds dressed, the gobbler weighing thirty-four pounds, one year old.

The fattening of beef cattle will soon be a thing of the past, for we cannot compete with the great quantities of western dressed beef which fill our markets. We were visited with the Texas cattle fever in the fall. But for the prompt action of our State Board of Health, who had the different lots liable to disease quarantined, there might have been considerable loss.

In most sections of our county very little attention is given to the raising and fattening of hogs. But very few cases of hog cholera the past year.

The production of milk is rapidly increasing, and many are turning their attention to that branch of industry. Our two creameries have done a good business, not being able to supply the demand for butter.

The hay crop is the largest ever gathered in the county, and was secured in good condition. John H. Denise reports one hundred and sixty-five tons gathered on sixty acres, being two and three-quarters tons per acre. Five acres of timothy yielded eighteen and three-quarters tons, average three and three-quarters tons per acre. Five acres of clover yielded eighteen tons, an average of three tons and twelve hundred pounds per acre.

The potato crop not so large as last year but the crop very much better. Wm. S. Combs reports the following: Number of acres, twenty-five; principal varieties, Mammoth Pearl, White Star, Queen of the Valley and Magnum Bonum; total yield, five thousand six hundred and thirty-six bushels; average yield per acre, two hundred and twenty-five bushels. Largest yield, Mammoth Pearl, (five acres) three hundred and three bushels per acre. Smallest, Magnum Bonum, (five acres) one hundred and thirty-eight bushels per acre.

Corn much below the average and the quality poor, very much shrunk. John H. Denise reports grown on five acres four hundred and forty-eight bushels thirty one pounds—an average of eighty-nine bushels forty pounds per acre.

Wheat crop good and of excellent quality, many fields averaging from thirty to forty bushels per acre. J. H. Denise reports from five acres of Fultz two hundred and twenty-seven and

fifteen-sixtieths bushels, being forty-five and twenty-two sixtieths bushels per acre. D. D. Denise grew on two-thirds of an acre sowed October 22nd with Deitz Long Berry thirty-one and two-thirds bushels, at the rate of forty-seven and one-half bushels per acre.

Rye crop good, grain and straw low price, which does not make it a profitable crop.

Oats very little grown in most sections of the county. Crop fair and quality good.

Fruits, berries and vegetables are claiming a prominent place on our farms, as we have a large home market on our shores.

Apples a light crop, early varieties selling low, late varieties better.

Peaches a fair crop. Late ones sold for good prices.

Peas very light crop. Prices good, especially for late ones, Kieffers selling for \$6 per barrel. No blight.

Tomatoes a very large crop though reduced much by early frost. They are much more profitable to grow than wheat or corn if not too far to market them at the factories, realizing from \$70 to \$100 per acre.

The raising of roots for feeding stock is claiming some attention among the farmers. T. W. Ryall reports from one and eight-tenths acres he raised eighteen hundred bushels of sugar beets.

A simple knowledge of the time of planting and harvesting is but the alphabet of knowledge needed by him who would be a successful farmer. May the time speedily come when the great majority of the farmers will be men of the broadest culture. Then will be brought to light the hidden resources of the soil, bringing wealth to him who tills it.

MONMOUTH COUNTY AGRICULTURAL SOCIETY.

BY GEORGE F. WARD, SECRETARY.

With the year 1886 closes the thirty-third year in the history of this Society.

In reviewing the year's work, nothing unusual can be noted; there is every reason to believe the Society still maintains an estimable standing in the minds of the public, which public continues to liberally patronize the Society and aid the management in this commendable work.

The thirty-third annual fair occurred at Freehold, N. J., on September 7th, 8th and 9th, under very favorable circumstances so far as a large exhibit in all departments was concerned, as well as an anxious public ready to support the Society, but rainy weather set in for the third day of the fair, necessitating a postponement, with its attendant expenses, preventing the Society from making any money and rendering it impossible not to sustain a slight loss.

The management concluded to discontinue the field crop department for the year, much against their wishes, owing to the fact that the former rules and regulations of that department did not seem to prove at all satisfactory. In all probability this department will again be taken up under different regulations for the future.

The present indebtedness of this Society is about \$9,100.

MANAGERS, ETC., FOR 1887.

President.....	HON. WILLIAM SPADER.
Vice President.....	HON. C. D. HENDRICKSON.
Vice President.....	MR. JOHN H. DENISE.
Treasurer	MR. C. H. BUTCHER.
Secretary.....	Not yet determined.

HON. WILLIAM SPADER,
MR. N. S. RUE,
MR. L. F. CONOVER,
MR. JOHN W. PARKER,
MR. JOHN H. DENISE,
MR. THOMAS E. MORRIS.
MR. C. H. BUTCHER,
MR. GEORGE F. WARD,
MR. JAMES H. BUTCHER,
MR. THEODORE AUMACK,

HON. C. D. HENDRICKSON,
MR. GEORGE W. BROWN,
MR. SHERMAN B. OVIATT,
MR. EDWARD MARTIN,
MR. J. V. N. WILLIS,
MR. HAL. ALLAIRE,
MR. CORNELIUS ACKERSON,
MR. C. D. B. FORMAN,
MR. W. H. DAVIS,
MR. J. T. FIELD.

The date of the next fair has not yet been fixed.

MORRIS COUNTY.

MORRIS COUNTY BOARD OF AGRICULTURE.

OFFICERS.

President.....HON. A. W. CUTLER.....Morristown.
Secretary.....W. J. ELY.....Madison.
Treasurer.....E. C. HOPPING.....Afton.

DIRECTORS.

W. F. ELY,
JOHN MICHELL,
HENRY W. YOUNG,
E. C. HOPPING,

WM. JAMES,
H. FANSHAWE,
JOHN OLIVER,
SAML. M. HOPPING,
W. D. HOPPING.

(No report received.)

SALEM COUNTY.

SALEM COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD.

President.....	JOSEPH W. COOPER.....	Pedricktown.
Vice-President.....	RICHMAN COLES.....	Woodstown.
Secretary.....	H. C. PERRY.....	Alloway.
Treasurer.....	J. WALTER PANCOAST.....	Sharptown.

DIRECTORS.

JOHN W. DICKINSON.....	Woodstown.
WM. A. MILLER.....	Cohansey.
EMPSON ATKINSON.....	Woodstown.
EDWIN L. BORTON.....	Woodstown.
BENJAMIN F. STRAUGHN.....	Pedricktown.
M. D. DICKINSON.....	Woodstown.

DIRECTORS TO STATE BOARD.

JOHN W. DICKINSON.....	Woodstown.
J. WALTER PANCOAST.....	Sharptown.

SOCIETIES REPRESENTED.

West Jersey Agricultural and Horticultural Association ; Salem County Pomona Grange, No. 6 ; Woodstown Grange, No. 9 ; Friesburg Grange, No 81 ; Course's Landing Grange, No. 60 ; Pedricktown Grange, No. 46.

REPORT BY H. C. PERRY.

The Salem County Board of Agriculture was organized on the 22d of February, 1886, by delegates from the West Jersey Agricultural and Horticultural Association and the following Granges : Salem County Pomona, No. 6 ; Woodstown, No. 9 ; Friesburg, No. 81 ; Course's Landing, No. 60 ; Pedricktown, No. 46.

We have held three regular meetings since the organization. The first regular quarterly meeting was held in Pennagrove, May 15th. Prof. Mapes, of New York, gave an instructive lecture on

talk on complete manures. Theo. F. Baker, of Bridgeton, gave a very interesting and instructive lecture on market gardening with commercial fertilizers. W. O. Garrison, Secretary of the Cumberland County Board of Agriculture, gave a talk on the use of commercial fertilizers on farm crops, and Hon. William S. Taylor, Secretary of the State Board, was also present and spoke on the objects of the Board and importance of the farmers organizing.

This meeting was held at a very busy season of the year and the attendance of the farmers was not as large as was desirable.

The second quarterly meeting was held in the Court House, in Salem, on the 21st of August. At this meeting several important questions were discussed and Hon. Edward Burrough, President of the State Board, was present and gave a very interesting lecture on the subject of "Thought."

The third quarterly meeting was held in Woodstown, November 20th, when the following resolutions were discussed and passed :

I

WHEREAS, The farmers of New Jersey as a whole have received in the past little apparent benefit from the State College for the benefit of agriculture and the mechanic arts ;

Resolved, That the Salem County Board of Agriculture request the State Board of Agriculture to appoint a committee to report to the State Board at the annual meeting, in 1888, such changes in the course of instruction and in other directions as will largely increase the practical usefulness of the State College to the agricultural community.

II.

WHEREAS, We have been informed by Prof. Cook that certain fertilizer manufacturers have combined to prevent such stations as continue to publish commercial valuations from receiving National aid ;

Resolved, That we believe the chief value of the station reports depends upon its commercial valuations and request the State Board to strenuously oppose in Congress any provision that will prevent the publishing of these valuations.

The meetings of the Board are held quarterly, on the third Saturday in February, May, August and November.

The leading crops in the county are corn, wheat, hay, oats and potatoes, whilst tomatoes, sweet potatoes, melons, lima beans, rye, buckwheat, apples, pears, peaches, strawberries and blackberries are grown to considerable extent.

Potatoes, tomatoes and hay were the most successful crops the past year. Four hundred bushels potatoes per acre are reported in Quinton township; also twelve tons tomatoes. Louis Schaible, of Quinton, reports eight hundred and eighty-five baskets peaches from one hundred and five trees. Late melons and sweet potatoes were reported a success in Oldmans township, and twelve to fourteen tons tomatoes per acre are reported in Lower Penn's Neck.

Nearly all crops have been successful, with the exception of early planted melons, and in some localities sweet potatoes. The cause is thought to be too much wet weather in the early part of the season. The corn crop was somewhat shortened from the same cause.

The principal forage crops grown are fodder corn, oats, millet, timothy and clover.

The public roads in the county have been very much improved in the last few years, and for the most part are good. They are principally made of clay, gravel and oyster shells, and are maintained by a special township tax and overseers in each district.

About fifty per cent. of the farms in the county are farmed by the owners and fifty per cent. are rented, either for a money consideration or on shares.

Horses, cattle, sheep, swine and poultry are all raised in the county. The latter are considered by many the most profitable. Mrs. Emily Borton reports the profits from one hundred and thirty hens and five turkeys in the last year \$569.86, without the use of incubators or brooders.

Two cases of pleuro-pneumonia are reported in Upper Pittsgrove. Hog cholera is reported all over the county. In the township of Mannington it has been very fatal. Within the last two years gapes in chickens and chicken cholera are reported in some places. For hog cholera no remedies have proved effectual. Dr. C. P. Atkinson, of Palatine, gives as a remedy for gapes in chickens a small quantity of tobacco mixed with their feed. He also gives the following for chicken cholera: Two ounces each of capsicum,

alum, sulphur and resin ; pulverize and mix with a peck of corn meal and place where the fowls will have free access to it ; has also proved very efficacious in roup.

There seems to be a sufficiency of farm labor in the grain growing districts of the county and a scarcity in the trucking sections, which is probably accounted for by the use of improved machinery in the grain growing sections, where the labor is performed by horse power. The wages paid are about the same as last year and the farmers usually board their help.

English sparrow.—There has been no effort made to enforce the law in regard to the English sparrow. There seems to be a difference of opinion in regard to them. Some consider them a pest ; others want more of them.

Organizations.—The farmers of the county, as a rule, are not organized. There are, however, a few organizations, as will be seen by the following reports :

REPORT OF THE SALEM COUNTY PROTECTIVE ASSOCIATION.

BY J. W. DICKINSON.

The officers are elected annually and at present are :

President	J. W. DICKINSON.
Vice President.....	R. COLES.
Secretary.....	BENJAMIN BORTON.
Treasurer.....	C. H. RICHMAN.

There is also an Executive Committee consisting of nine members. The object of the Association is to prevent thieving as far as possible by offering liberal rewards for evidence to convict offenders and paying the expense of prosecution. The Association at present has about eighty members, whose names, with rewards offered, are published and placed in public places in the county which the thieving fraternity are sure to see, and if equal advantages offer themselves outside the membership they are sure to accept them, for the funds of the Association protect only its members and its officers pay no attention to any thieving outside.

The Association is fully satisfied its patrons have saved

themselves thousands of dollars during the last six years; they have succeeded in breaking up several organized bands by arrests and convictions and several are now serving their terms in Trenton.

REPORT OF SALEM COUNTY POMONA GRANGE.

BY EMPSON ATKINSON.

Salem County Pomona Grange has sixty-six members in good standing. It meets quarterly, the meetings being pretty well attended. The purchases made amount to considerable, yet nothing to what they might if there was a more thorough organization of farmers and wise recognition, on business principles.

Intellectually the Grange has been a great success. It has done much to educate the farmers into the principles of equal rights and justice towards all, doing away with the awkward and selfish ideas which man is prone to revere and uphold. Never was there a time that farmers needed organization so much as the present. We have only to look at the annual reports of the various banking houses, with the advantage given them by the general government, and see. The Salem National bank has just declared a semi-annual dividend of five per cent., Woodstown six per cent., and Bridgeton seven per cent., yet farmers with labor and capital combined are not getting over three per cent. per annum.

It is time for us to get in shape or it will be like the present condition of Ireland, Russia and Southern China. The farmer of America will cease to be the independent farmer as spoken of in days of yore. Monopolies on all sides need to be looked after and that with a more attentive eye than is now upon them.

REPORT OF THE WEST JERSEY AGRICULTURAL AND HORTICULTURAL ASSOCIATION.

BY JAMES D. LAWSON.

Our organization is a stock company. Some of the members own several shares and the shares are marketable the same as any other stock.

The work shows for itself by the introduction of fine herds of stock and the advancement of agriculture in every way.

REPORT OF THE PILESGROVE DAIRY ASSOCIATION.

BY RICHMAN COLES.

The Pilesgrove Dairy Association is composed of four hundred and sixty shares of stock at \$10 per share, and is held by about sixty farmers who deliver their milk to the building once every day. The business is conducted by a board of nine directors elected annually, who employ the necessary help. The milk is run through a separator and the cream is chiefly manufactured into butter, but some is sold for the purpose of ice cream making; when milk becomes scarce in the city some is sold to the Philadelphia milk dealers.

The quantity of milk received for twelve months commencing December 1st, 1885, and ending November 30th, 1886, is as follows:

Number pounds of milk received, 2,102,808, from which was manufactured 56,442 pounds of butter.

Amount of cream sold, 35,571 quarts; amount of milk shipped, 30,944. Total value, \$22,957.50.

The skimmed milk for the most part is sold to the patrons for pig feed.

REPORT OF COURSES LANDING GRANGE, No. 60.

BY HENRY GARDINER.

This grange has twenty-one members in good standing, who meet weekly and have discussions on different subjects. Also recitations and readings of such subjects as will most interest the members. Some purchases are being made to good advantage through the grange by the members.

REPORT OF WOODSTOWN GRANGE, No. 9.

BY GEORGE H. KIRBY.

Woodstown Grange, P. of H., numbers one hundred and thirty-one members in good standing at present time. During the past year we have discussed all questions in season arising from an agricultural standpoint—questions of interest to this locality and elsewhere.

We have concentrated in various ways our order for purchasing ; for instance, in buying clover seed to the amount of \$600 to \$700, binding twine by the ton, &c.

FRIESBURG GRANGE, NO. 81.

Friesburg Grange has a membership of twenty-nine at the present time, who meet weekly and discuss the various questions of the day and their relative bearing on agriculture. They also purchase fertilizers, grass seeds and groceries by the wholesale, amounting to an average of about \$2,500 per year, thus making quite a saving to the members.

SOMERSET COUNTY.

ANNUAL REPORT OF THE SOMERSET COUNTY BOARD OF AGRICULTURE.

BY W. S. POTTER.

Our County Board is composed of the following members—
(It being the same as the Somerset County Agricultural Society,
there not being any other societies in the county.)

President	COL A. S. TEN EYCK.....	Somerville.
Vice-President.....	HON. CALVIN CORLE.....	Neshanic.
Treasurer.....	L. R. VREDENBURG.....	Somerville.
Secretary	WILLIAM S. POTTER.....	Somerville.
General Superintendent.....	PETER DEWITT.....	Somerville.

DIRECTORS.

JAMES P. MAJOR.....	Somerville.
HENRY S. LONG.....	Raritan
ALBERT VOORHEES.....	Millstone.
JACOB S. HOAGLAND.....	Harlingen.
A. A. CORTELYOU.....	Neshanic.
JAMES CRAIG.....	Dunellen.
JOHN R. LEWIS.....	Baskingridge.
H. A. VANDERBECK.....	Lamington.

DELEGATES TO STATE BOARD.

DAVID C. VOORHEES, one year.....	Blauenburg.
WM. S. POTTER, two years.....	Somerville.

Our stated meeting is held annually, on the third Saturday in
February, in the Court House, at Somerville.

CROP REPORT.

1. There are no organizations of farmers in the county, except
the Somerset County Agricultural Society.

2. The leading crops raised are hay, corn, wheat, oats, peaches,
pork, poultry, beef, butter and milk, about in the order named.

3. The most successful crops were hay, wheat and peaches.
4. Corn was the most unsuccessful crop, about forty per cent. short. Cold and wet weather in the spring and dry at the close of the season.
5. No great improvements in the manner of farming or in farm machinery. The most wonderful improvement is in the executive ability of the farmers in paying prices for labor, &c., that warrant no strikes, and being compelled to sell their products at prices that should make a farmer strike.
6. For forage, corn and rye to a small extent.
7. Roads generally bad; unfit material used. Large road taxes paid, but little work done for the money. One of our public spirited citizens offered twenty-five dollars premium for the best worked road district. If continued this may cause a spirit of rivalry among overseers, and our roads be put in better condition. Within a few years our roads are all being worked by road machines, worked by two or four horses.

There is an important law compelling overseers of roads to cut and destroy briars, bushes and foul weeds on the roadside which is almost entirely neglected.
8. About sixty per cent. of farms are worked by the owners and forty per cent. rented.
9. Horses, cattle, sheep, swine and poultry are raised. No prevailing disease among any of them.
10. There is a sufficiency of farm help; in some parts of the county a slight advance in wages over last year, especially in time of hay and harvest. Farmers generally board their own help.
11. In regard to the English sparrow there is no desire to protect the rascals. Mr. Voorhees, our delegate, being also a member of the Princeton Agricultural Association, was by them appointed to confer with the Agricultural Department at Washington on the sparrow question, rather more as a joke than anything else, but in his communications with that department they thanked him very much for his views on their destructive qualities, and commenced to get reports from all parts of the United States. Also the Society of Ornithology corresponded with him and asked for a special report on the subject. So that war against the winged foreigner is now open from Maine to Texas and from the

Atlantic to the Pacific. They are declared the greatest nuisance of the times—destroyers of grain, fruits and garden vegetables, as well as of the peace and happiness of all the useful and harmless song birds of this country. Mr. Voorhees says that the damage done in this county by them is so enormous that he is unable to estimate it. The subject of the most interest at the present time is, "How can farming be made profitable."

Respectfully submitted,

WILLIAM S. POTTER,

Secretary Somerset County Board of Agriculture.

SOMERVILLE, January 24, 1887.

REPORT OF THE SOMERSET COUNTY AGRICULTURAL SOCIETY.

(Organized 1870.)

The members and officers are the same as of the Somerset County Board of Agriculture.

Hold their annual meeting of directors the third Saturday in February.

Annual fair first week in October.

The last annual fair exceeded all former ones in stock and articles on exhibition, as well as attendance.

The receipts were as follows:

Gate admissions.....	\$8,557 50
By Secretary for entries.....	1,977 95
Sutlers and stands.....	718 75
Grand stand.....	451 80
Other sources.....	82 50
	<hr/>
	\$6,788 80

EXPENDITURES.

Premiums.....	\$1,472 50
Speed Premiums.....	2,075 00
Advertising, &c.....	1,602 68
	<hr/>
	\$5,150 18
Receipts over expenditures.....	1,638 12
	<hr/>
	\$6,788 80

The Society have nothing to report in addition to the report of the County Board.

WM. S. POTTER,

Secretary.

SUSSEX COUNTY.

SUSSEX COUNTY BOARD OF AGRICULTURE.

At a meeting of farmers and milk producers, held at Deckertown November 27th, 1886, it was resolved to form an organization, in accordance with the provisions of the act of 1884, to be known as the Sussex County Board of Agriculture.

The following officers were then elected :

President.....	HON. THOMAS LAWRENCE.
Secretary.....	THOMAS ARMSTONG.
Treasurer.....	JOHN LOOMIS.

DIRECTORS—(the number to be increased at the option of the Board :)

Vernon.....	HON WM. OWEN, CAPT. BAILEY,
Hardyston.....	B. K. JONES, W. J KIMBLE,
Frankford....	L. H. S. MARTIN, JNO. W. CRANE,
Lafayette.....	SYLVESTER J. SLATER, RAYMOND SNYDER,
Wantage	JAMES F. MARTIN, W. A STILES,
Sparta.....	R. M. KIMBLE, GARRET GUNDERMAN,
Newton.....	WILLIAM PINKEY,
Andover.....	ALBERT PUDER, NATHAN A. STACKHOUSE,
Byram.....	PETER D. SMITH,
Hampton.....	WILLIAM HARDEN, JOHN I. HIBLER,
Green.....	GEO. GREEN, DAVID WARBASSE,
Sandyston.....	JACOB I. SMITH, JOHN LAYTON, JR.,
Montague.....	DANIEL EVERETT, GEO. HORNBECK,
Walpack.....	JACOB ROE, EMMET BELL,
Stillwater.....	MAHLON BUDD, WILLIAM P. COURSEN.

The appointment of the delegates to the State Board of Agriculture being within the province of President Lawrence, he delegated as such representatives Hon. J. A. McBride and Wm. A. Stiles.

REPORT BY W. A. STILES.

This county board was organized so late in the season that no arrangements could be perfected for securing trustworthy crop reports from the various townships in time for the meeting of the State Board. No meeting of the county board has been held since the one at which the board was formed.

The topic of chief interest then discussed was the unsatisfactory condition of the milk traffic. More than nine hundred cans of milk are sent to New York every day from a narrow strip of land on either side of two or three railroads running through the county. Besides this there are several creameries on these railroads where the price paid for milk is regulated by the New York market rates. During the year the price has not been high enough to insure a living profit to producers.

For January it was three and a half cents per quart ; for February three cents ; March, three cents ; April, two and three-quarters cents ; May, two and one-sixth cents ; June, two cents ; July, two cents ; August, two and one-quarter cents ; September, two and one-half cents ; October, three and one-half ; November, three and one-half ; December, three and one-half ; making an average of two and twenty-nine thirty-sixths cents per quart for the year. This is more than half a cent per quart less than the price paid four years ago when it averaged three and one-half cents. Including milk sold at creameries this loss was felt in the sale of at least one thousand forty-quart cans per day and amounted to \$200. That is, in the course of the year the milk producers of the county received at least \$73,000 less than they received four years ago. This is a reduction of income that the farmers cannot endure. They have no voice or influence in fixing the price which is regulated by an organization of city dealers and creamery men known as the New York Milk Exchange, limited.

UNION COUNTY.

UNION COUNTY BOARD OF AGRICULTURE.

(Organized December 11th, 1868.)

OFFICERS FOR 1887.

President.....	DENNIS LONG.....	(Irvington) Union P. O.
Secretary.....	DENNIS C. CRANE.....	Roselle.
Treasurer.....	ROBERT WOODRUFF.....	Westfield.
Librarian.....	DENNIS C. CRANE.....	Roselle.

DIRECTORS

E. P. BEBEE.....	Elizabeth.
OGDEN WOODRUFF.....	Elizabeth.
WM. B. DUDLEY.....	Westfield.
J. W. CORY.....	Westfield.
BENJ W. TUCKER.....	Linden (Elizabeth P. O.)

DELEGATES TO STATE BOARD.

NOAH W. PARCELL.....	Elizabeth.
DENNIS C. CRANE.....	Roselle.

REPORT BY DENNIS C. CRANE.

Last year in our report to your Board we gave some idea of the character of our county, its towns, soil and products, with some suggestions that we thought would benefit the farmer. This year we shall endeavor to answer the questions asked in the circular sent out by your Secretary and give some reasons for the opinions we hold upon subjects that interest us in Union county and we believe farmers in other parts of the State.

COUNTY BOARD.

We have but one farmers' organization in our county and that is the Union County Board of Agriculture. It has on its roll twenty-eight more or less active members. It holds its meetings

in the County Court House the first and third Thursday afternoons of the winter and spring months; also a picnic and strawberry exhibition in June. The local papers print reports of the discussions, which extends the influence outside of our own membership. The topics which we have considered have been varied, all however pertaining to the farm.

COMMERCIAL FERTILIZERS.

In our meetings and farm yard discussions commercial fertilizers have received not a little attention. Opinions differ as to the merits of different brands and the profit from their use. The experience of some has prejudiced them so that they agree that the manufacturers and their agents are the principal ones that have been benefitted, that it has taken more money out of the farmer's pocket than it has returned, and in the face of popular sentiment would advise the average farmer (while the prices are so high) to save their money, or use it in buying near-by stable manure, feed and bran, and keep growing or money producing stock. The commercial fertilizer men, on the other hand, contend that while there has been deception more or less in the past,
noss to the farmer, these fertilizers in the future are to hold an important place in farm management. Their concentrated form lessens the cost of handling over stable manure. Their freedom from weed seed makes them especially useful in the growing of hoed crops, and as an auxiliary to barn yard manure and soils deficient in some important element of plant food, they are to the intelligent farmer of great value. Another argument which they offer is, that ten times as many bags of it were bought and used in our county last year as there was ten years since. The bulletins sent out by the Experiment Station are read with interest and are tending to educate our farmers and make them critical on this subject.

SAVING AND MAKING MANURE.

No subject attracts a better attendance to our Board meetings than the one subject of manure. To the esthetic taste it may not sound altogether agreeable, but the intelligent practical farmer is so absorbed with the thought of an abundant harvest of nice clean food for man and beast that he bears the reproach

with indifference. One of our members recommends a method of making and saving manure which we think worthy of mention here. It may not be new, still it should be more common. During the summer and fall months, when the dirt roads are dry, and the dust is thick, he has his men scrape up and draw to his barn a dozen or more two-horse loads, filling vacant horse stalls, and near-by sheds. Every day through the fall, winter and spring months, several shovelfull of this dry earth are spread under each cow and horse. It absorbs the urine, keeps the stables dry and sweet, saves bedding, and when thrown out in the manure pile keeps it from overheating. It is also freely used in the hen house.

He also believes in a manure shed, to save his manure from the drying sun and winds, and washing rains. This enclosed building is thirty-five by fifty and handy to wheel the manure from his stables. The pile is made fifteen feet wide, six feet high and runs through the center of the building, leaving a wagon way on either side. Around the sides of this heap is a trench, into which the drainage water collects and to keep it from over heating. This water is pumped over the manure once a week or as often as necessity requires. After it has rotted fine, or matured as he calls it, it is then ready for use. He has great faith in top dressing grass and meadow lands and turning under a heavy sod, in following his rotation of crops. In top dressing he chooses those spells after mowing when the ground is the driest, then the rains when they come wash the decomposed manure down into the ground and it does not run off as it would be likely to if spread when the ground was full of water or frozen.

STORING FODDER IN SILOS.

There are ten or a dozen silos in our county, owned by farmers keeping milch cows and other stock. They all express satisfaction with the result. Corn and other crops stored green in this way they claim is healthy, and the cattle like it. It has no deleterious effect upon the milk or butter, and enables them to keep a greater number of animals which return them a better profit. The great saving from waste is the principal advantage. Sowed or drilled corn (which is about the only crop raised for this purpose) if dried in the old way is very apt, with the best of

care, to mold, fall down on the ground, get muddy and weather beaten, and the butt ends become hard and useless for feeding. Stored in the silo all this waste is saved and the work being done during the long days of summer, and all at once, the cost of labor is less.

ROADS AND STREETS.

Our people are beginning to take a greater interest in the improvement of our public roads and streets. Real estate owners and all see that with good roads the better class of New York business men and clerks are invited to settle among us, property is enhanced in value more than the cost and every interest seems to be benefitted. Towns, villages and townships are voting money liberally for the purchase of cracked stone, and the era of impassable main roads in the spring promises soon to be a thing of the past. There are three stone crackers at work in the county and a great deal is brought down on the Central Railroad, mostly screenings from stone used as ballast. It is delivered at the depots at about \$1.00 a cubic yard. It proves to be a most excellent top dressing, even when put directly on the earth, four or six inches thick. The rain and travel of one year will so compact and cement it together that it will bear the heaviest loads even in the spring, when the frost is coming out. There is also a slag used brought from the iron furnaces of Morris Co. It is lighter and cheaper, costing only the handling and freight, which is about seventy-five cents a ton at the depots. This has been used to some extent as a foundation six inches deep, spreading some clay over and letting the rains wash it into the crevices, and then rolling with a heavy roller. Over this a coat of screenings or cracked stone is spread three inches thick. Only from ten to fifteen feet of the center of roads that have a proper grade are macadamized. The village streets and main roads are receiving first attention.

COMPETENT ROAD OVERSEERS.

We wish to make a suggestion in regard to the qualifications of our road overseers. It seems to us one reason why our roads throughout the county are not kept in better condition is that incompetent overseers are appointed, men who have little or no

knowledge of the work they are called upon to do, often in fact doing more harm than good. We require that a minister, doctor, lawyer and teacher in our public school shall hold a certificate showing that they have a certain knowledge of well established principles which ensures their continuing on the work of their predecessor. Now would it not be well for the State to take steps to have published a text book containing rules to be observed, and general information on road making.

Possibly if the State Board would invite from competent ones in different parts of the state advice or plain practical essays on the subject, offering some compensation, material would be obtained sufficient to make a good start in the right direction. After we have laid a foundation in adopting a text book then would it not be well to have a law passed enabling each township to elect at their regular township elections such person having some knowledge of surveying and engineering, as well as the art of roads, who shall be superintendent of all the roads in the township. Such superintendent, before he is eligible to such election, shall hold a certificate from a county board of examiners, the present road overseers to be under his direction.

We cannot in this report more than briefly mention the main feature of this change but we believe it would if carried out be attended with good results.

UNDERDRAINING.

The soil of Union county, like much through the central part of the State, has a clay subsoil, which is inclined to hold water on low ground. This water-soaked land is cold, compact and grows mostly wild grass, or that which is of but little value to the farmer. What it wants is to be well underdrained, so that the surplus water after heavy rains can readily soak away, so that the sun and air can enter it, to sweeten and lighten it up, and the growing crop when planted will not only find nourishment and congenial surroundings for its roots, but will not be drowned out when excessive rains come. There is little satisfaction in working this low ground or high ground where it is springy, for three seasons out of five the crop will be injured or destroyed by heavy rains, sometimes causing a loss almost equal to the cost of underdraining. Some of our best farmers think

more attention should be given to this subject is not for one year, but if well done, for a lifetime every year. It often makes land that is to be paid on, and which yields no return, the the farm. Many farmers do not fully appreciate the reason why more interest has not been taken we think, the cost of procuring the tile, and them from where they are manufactured.

How would it do for the Freeholders in the a soil that needs underdraining to purchase machinery for tile making, engage practical tile tendents, and set to work the idle prison tramps that walk back and forth on our road to the farmers at cost price. This may be left the farmer but would it not be a great benefit claiming waste land, increasing its products its land.

RENTED FARMS.

As in nature when one variety of wood is cut another variety springs up, so has it been in our county near the towns and railroads. American farmer, who endeavored to improve and sought the welfare of his neighborhood is gone. The speculator has bought him out a place to anybody who will promise to pay the speculator is probably a non-resident, a wealthy business holding the land hoping to make money out of building around his property, or the coming of or near him, or meeting some fool who is not have no intention of spending money for it depend entirely on the labor and self sacrifice renters are generally foreigners and usually not farming. Father, mother and children work hard live economically and spend little or nothing for charities or public improvements. They are property that they can call their own even though they sometimes have to disregard the rights of the farms which they rent of their fertility, and buildings. These rented farms should be protected

some way. It is simple justice to the next neighbor who keeps things up in good shape. The welfare of the county and State demand it. Probably twenty-five per cent. of the land in the county is owned by non-residents. One of the evils attending this land is the

FOUL WEEDS,

which grow without hindrance and scatter their seeds over adjoining lands. The wild carrot especially has been allowed to grow and scatter until there are but few meadows but what in August and September are white with these flowers. I believe the law requires that this weed shall not be allowed to go to seed. Should not farmers enforce it? How would it do in connection with this law to authorize town committees to let out the public roads to a suitable person for pasturing sheep, the shepherd to first obtain consent of the farmers along the road. The understanding to be that he assumes the responsibility of keeping down the weeds, and be liable for all damages done to crops by his sheep. The money received for this privilege to be expended in keeping the roads in repair. If the law was rigidly enforced against weeds going to seed, many non-residents and owners of uncultivated land would gladly let these shepherds pasture their land for a small rental upon condition that the shepherd assumes all legal responsibility. It seems to us it would be a mutual advantage all around. The washing from roads often makes excellent pasture on the sides. Supposing the shepherd gets sufficient road and unoccupied farms at a fair rental to keep a thousand sheep, it would afford quite an income. The township is liable for damages done by dogs. The property owners would be free from the labor and liability of keeping the weeds from going to seed, and the roads in front of their places and farms that were pastured would be benefitted more than damaged by the evenly distributed droppings. The township would receive money for road purposes. It would have to require of the shepherd that he fold his sheep at night or leave them out at his risk, and hold all owners of dogs accountable for damage which they might do.

STATISTICS.

	Hay.	Corn.	Oats.	Rye.	Wheat.	Fodder.		
						Corn.	Rye.	Hun. Grass.
Yield compared with 1885	100	75	100	100	100	90	100	90
Yield per acre.....	2500 lbs.	40	25	20	15	.....	.....	.....
Number of acres.	80,000	10,000	3000	1000	500	500	200	100
Price.....	\$17.00	50	40	56	90	.....	.....	.....

	Potatoes.	Cabbage.	Turnips.	Carrots.	Celery.	Tomatoes.	Apples.	Pears.	Peaches.	Grapes.	Blackberries.	Raspberries.	Currants.
Yield compared with 1885	80	40	40	90	40	110	175	100	85	75	100	100	85
Yield per acre.....	100	800	100	400	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of acres	1500	800	1000	50	.....	800	1500	150	250	75	150	150	25
Price	75	8	85	45	.....	.....	.....	.....	.....	.....	.....	.....	.....

The hay crop was very good, and harvested in good condition. Corn that was planted early and on high ground did well, but that planted late and on low land suffered from excessive rains in June and the protracted drouth through the late summer and fall. Potatoes are reported an average crop on the light sandy soils and poor on heavy, undrained land. Oats, rye and wheat are reported very good. The summer and fall growing vegetables, cabbage, turnips and celery, owing to the continued dry weather, are almost a failure. New sown timothy also dried up after starting.

AN ACT
TO ORGANIZE A STATE BOARD OF AGRICULTURE.

AN ACT

TO ORGANIZE AND ESTABLISH A STATE BOARD OF AGRICULTURE.

WHO TO CONSTITUTE THE MEMBERSHIP.

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey*, That the members of all agricultural and horticultural societies, farmers' clubs, granges of the patrons of husbandry, and other agricultural associations, shall constitute the membership of the State Board of Agriculture.

WHO TO CONSTITUTE THE DIRECTORS OF THE BOARD.

2. *And be it enacted*, That the board of directors shall hereafter consist of the following, viz. :

Class A—Two members of the board of managers of the geological survey, to be appointed by said board ; two members of the board of visitors of the state agricultural college, to be appointed by said board ;

Class B—The professor of agriculture in the state agricultural college, the president and director of the state experiment station, and the master and secretary of the state grange, patrons of husbandry ;

Class C—Two delegates from the state agricultural society, two delegates from the state horticultural society, two delegates from the cranberry growers' association, one delegate from each pomona grange, and two delegates from each county board of agriculture which may associate itself with the state board in the manner hereinafter provided.

WHO TO RECEIVE COMPENSATION.

4. *And be it enacted*, That the officers, board of directors and

committees appointed by the state board (or by the board of directors), shall receive compensation from the state for their personal expenses, when engaged in the duties of the said board ; the secretary of the state board shall receive an annual salary of six hundred dollars, and may, with the approval of the executive committee, employ a clerk or clerks, at an expense of not over one hundred dollars a year.

WHO ENTITLED TO VOTE.

4. *And be it enacted*, That all members of the state board, as set forth in section one of this act, shall be entitled to vote on all questions at the meetings of the board, and also to hold office and serve on committees, but to receive compensation only as provided in section three of this act.

POWERS OF THE BOARD.

5. *And be it enacted*, That the state board of agriculture shall have full power to investigate such subjects relating to the improvement of land and agriculture in its various branches in this state as they may think proper, and may take, hold in trust and exercise control over donations or bequests made to them for promoting scientific education or the general interests of agriculture ; they shall have power to elect to membership such state organizations as may from time to time apply, by a majority vote of the board or of the annual meeting assembled, and such organization shall, upon election, be entitled to two delegates, the same as provided in section two of this act.

6. *And be it enacted*, That it shall be the duty of the state board of agriculture to encourage and aid, as far as practicable, the formation of county boards of agriculture in the several counties of this state, that all the agricultural interests of the state may be fully represented.

ANNUAL MEETING OF BOARD AND ELECTION OF OFFICERS.

7. *And be it enacted*, That the board shall meet at the state house, in the city of Trenton, at least once each year (and as much oftener as may be deemed expedient), and shall elect a president, vice-president, secretary and treasurer, who with three

others to be elected at the same time, shall constitute the executive committee of said board, and they shall appoint two members, who shall constitute a committee to examine the vouchers and audit the accounts of the treasurer of the said board.

TERM OF OFFICE OF DIRECTORS.

8. *And be it enacted*, That the members of the board of directors shall hold office the following terms :

Class A, one year.

Class B, one year.

Class C, two years, the representatives of each association retiring alternate years.

EXPENSES OF THE BOARD HOW PAID.

9. *And be it enacted*, That the expenses of the officers, board of directors and committees, as provided in section three of this act, shall be forwarded to the executive committee of the state board, who shall make up the same from time to time, together with the salary of the secretary, which account, when approved by the president of the board, and attested by the secretary, shall be presented to the comptroller of the state, who shall thereupon draw his warrant therefor upon the state treasurer, who shall pay the same out of any moneys in the treasury not otherwise appropriated, to the treasurer of the state board of agriculture upon such warrant, which amount shall be considered part of the annual appropriation as provided in section ten of this act.

TO EMPLOY LECTURERS, CAUSE EXPERIMENTS TO BE MADE AND AP-
PORTION MONEY.

10. *And be it enacted*, That in order to collect and disseminate reliable and useful information, and to encourage a higher standard in the agriculture and horticulture of the State, the executive committee are hereby authorized to cause to be made experimental and practical tests of specific remedies or cures of diseases of domestic animals and poultry, and to employ suitable persons to lecture before the state board of agriculture, at its annual or other meetings, to examine the reports of the state horticultural society and all other reports, essays, papers and

documents, and to accept or reject the same, or any portion thereof; to apportion to the state horticultural society and the several county boards such sum or sums of money, for the information secured and the labor performed, as they deem equitable, such amount not to exceed one hundred dollars in any one year to any county board, one-half of this amount to go to the party or parties making up the report and one-half to the treasury of the county board, to pay its running expenses, submit the amounts thus determined upon to the state comptroller, who shall thereupon draw his warrant upon the state treasurer, who shall pay the same out of any moneys in the state treasury not otherwise appropriated, to the treasurer of the state board of agriculture; *provided*, that the amount thus expended shall not exceed the sum of thirty-seven hundred dollars in any one year.

TREASURER TO SUBMIT A STATEMENT.

11. *And be it enacted*, That the treasurer of the state board shall annually submit an itemized statement of his receipts and expenditures, together with the vouchers for the same, to the auditing committee of the state board, who shall make a report of their examination to the state board of agriculture at each annual meeting, which statement shall be published in its annual report.

COUNTY BOARD, HOW CREATED AND MEMBERSHIPS.

12. *And be it enacted*, That the membership of the county boards shall consist of all the members of the agricultural and horticultural associations of each county, and such others as they may elect.

I. In counties having no agricultural or horticultural associations any number of citizens not less than ten may organize a county board of agriculture by electing a president, a secretary, a treasurer, and a board of not less than five directors, adopting the name of "The county board of agriculture" (inserting in each case the name of the proper county), and filing with the secretary of the state board of agriculture a certificate of such organization; *provided, however*, that upon the formation

of any agricultural or horticultural association in said county, they shall become members of such county board, as provided in articles two and three of this section.

II. In counties having but one agricultural or horticultural organization (whether known and designated as a "society," "club" or "grange,") such organization may become the county board of agriculture for such county by electing the officers and directors prescribed in the first paragraph of this section, adopting the name of "The _____ county board of agriculture" (inserting the name of the proper county) and filing with the secretary of the state board a certificate of such organization.

III. In counties having more than one agricultural or horticultural organization (whether known and designated as "societies," "clubs," or "granges,") such organizations, or so many of them (not less than two) as may elect so to do, may organize a county board of agriculture by electing a president, a secretary, a treasurer, and a board of directors to consist of one member of each agricultural or horticultural organization of said county (that may elect to become members of such county board), adopting the name of "The _____ county board of agriculture," (inserting in each case the name of the proper county) and filing with the secretary of the state board of agriculture a certificate of such organization.

IV. The president, secretary and treasurer of such county board of agriculture shall be ex-officio members of the board of directors of such board.

V. Every certificate filed, as hereinbefore provided, shall truly and correctly state, first, the name of the county board filing the same; second, the date of its organization under this act; third, the names of its officers and directors; fourth, the names of bona fide members in each organization represented in the county board at the date of organizing said board, and the names of such organization.

VI. In any county in which there may be at the same time a county board of agriculture and any other agricultural organization, such board shall have the prior right to representation in the state board, unless for good cause shown the said state board, or its executive committee, shall otherwise order.

COUNTY BOARD WHEN TO MAKE REPORT.

13. *And be it enacted*, That it shall be the duty of each county board of agriculture, on or before the fifteenth day of December in each year, to make a full report of transactions of such board during the year next preceding, with as complete a statement as practicable, of the condition, progress and results of agricultural and horticultural industries in such counties respectively, together with reports of such special subjects of inquiry as may from time to time present themselves to such county boards, or be submitted by the state boards of agriculture, or the executive committee thereof, and forward the same to the secretary of the state board of agriculture, and it shall be the duty of the several representatives of county boards in the said state board to make a full report to their respective county boards of the proceedings of such meetings of the state board as they may from time to time attend.

DIRECTORS TO MAKE BY-LAWS.

14. *And be it enacted*, That the directors of the state board of agriculture, or its executive committee, shall have power to make all necessary and proper by-laws for carrying into execution the provisions of this act, and to adopt suitable rules and regulations, not inconsistent herewith, for the government of the state and county boards of agriculture.

MAKE REPORT TO THE LEGISLATURE.

15. *And be it enacted*, That annually, on or before the fourth Tuesday in February, the executive committee, through its chairman or secretary, shall submit to the legislature a detailed report of the doings of the state board of agriculture, together with such recommendations as the interests in their charge may require.

ACTS REPEALED.

16. *And be it enacted*, That the act entitled "An act to organize and establish a state board of agriculture," approved April twenty-second, one thousand eight hundred and eighty-four, and the supplement thereto, approved March tenth, one thousand eight hundred and eighty-five, be and are hereby repealed.

17. *And be it enacted*, That this act shall be deemed a public act and take effect immediately.

Approved April 1st, 1887.

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